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ALTERNATE USES OF ELECTRIC POWER TRANSMISSION RIGHTS OF WAY WITHIN URBAN AREAS

A THESIS

Presented to

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by

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WITHIN URBAN AREAS

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TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

SUMMARY

The purpose of this study is to explore the reasonableness and feasibility of having joint uses of electric power transmission rights of way within urban areas and to present conclusions and recommendations pertaining to such uses. It was found that the joint use of said rights of way is increasing in frequency and scope throughout the United States.

The spiraling costs of right of way land acquisitions in urban areas, as well as the maintenance of these rights of way, have created widespread interest in joint use. The desire on the part of utility companies to establish and maintain a good community image by not permitting their rights of way to become community development barriers also is a contributing factor.

The characteristics of overhead alternating current transmission lines are examined to acquaint the reader with the interrelationship of design elements which determine right of way width and other factors which influence joint use decisions. Although the National Electrical Safety Code sets minimums, actual design standards may vary due to local peculiarities and requirements.

Although a utility may desire to have rights of way without any encumberances, this ideal is not realistically attainable. A questionnaire was sent to 65 selected utility companies to which 41 responded. The results revealed that many joint uses of right of way now exist. The concensus indicates that generally most of the activities are associated with urban uses. Uses prohibited are buildings and structures

and items or activities which constitute potential fire hazards or which directly interfere with the goals of the company.

Photographs of various joint uses of transmission line rights of way are included in the text.

The problems with and advantages of joint uses, as described in the completed questionnaires, are discussed. Most of the responding utilities indicated that few major problems have occurred and one company ventured a reason for this, namely, that joint uses are subordinate to the primary purpose for which the right of way was acquired.

The use of electric power transmission line rights of way for park and recreation purposes, particularly "linear parks," is an area that needs much more exploration by communities and utility companies. The results should be mutually beneficial.

The methods by which joint uses can be brought about are reviewed. Examples of legal forms used by some utility companies are included as Appendix D. Answers to the questionnaires disclosed that joint use requests involving transmission rights of way are, for the most part, evaluated on their merits. Standard forms for processing joint uses are the exception rather than the rule.

Single purpose rights of way should be evaluated by communities to determine the potentialities for joint use. Future possibilities are limited only by the innovativeness of officials on both sides -- the utility companies and the communities.

CHAPTER I

INTRODUCTION

The competition for use of land for the many urban purposes is increasing. This has been brought about in part by the changing patterns of living, as indicated by urban and suburban development and redevelopment programs. The trend for more judicious use of land has created a three dimensional thinking with the advent of the use of air rights above limited access highways, railroads, and other land users with linear patterns and exclusive single purpose rights of way. This three dimensional use of land concept will now be applied to electric power transmission lines. Although in this instance, the ground under the power line rather than the air space over the right of way, which of course is already in use, will be explored. The increasing cost of land has given impetus to revaluation of the use of single purpose rights of way.

Objective of the Study

This study was undertaken in an effort to determine the reasonableness and feasibility of bringing about compatible joint use of electric power transmission rights of way in urban areas -- a vital part of the urban environment.

To accomplish this goal it is necessary to acquaint the urban planner with the technical operation of electric power facilities. It is only through an understanding of the utility's requirements that the

urban planner will be in a position to advise and suggest alternative uses for transmission rights of way. On the other hand, the electric utility planner often is not familiar with the urban planning process, thus his labors may result in an expertly executed power system which may, at the same time, be a detriment as an urban land use.

It behooves the urban planner and his utility company counterpart to work closely together if our urban environment is to successfully absorb all of the electric power facilities which have been proposed and which, incidentally, will have a productive capacity equal to all of the power systems in operation today. These otherwise purely utilitarian functions can, if properly designed, enhance rather than harm the over-all amenity.[1] The practices of the past must be used as spring boards to new techniques, not just as patterns to be repeated. Only through mutual understanding and cooperation will there eventually result a system of electrical power which will truly serve the public.

The objective of this study is to present conclusions and recommendations for joint uses of electric power transmission rights of way within urban areas.

The Need For Joint Use

Between the beginning of 1967 and the end of 1972 the electric power industry of the United States plans to build 77,710 circuit miles of overhead transmission lines.[2] By 1980 their transmission networks will be expanded by fifty per cent in order to satisfy the public's appetite for electrical energy.[3] By the very nature of things this expansion will have to be accomplished at the expense of encroaching on

the "public environment." The encroachments will be through the acquisition of new rights of way as well as expanding the capabilities of facilities on existing rights of way.

The community and the electric power industry should become concerned with not only the increasing costs of land for right of way purposes but also the use of these rights of way. For example, canal, railroad, highway, transmission line, and other types of right of way collectively can amount to as much as 100 to 120 acres of land per lineal mile of area through which they pass. Alexander G. Lester, Vice-President of the Bell Telephone Company of Canada, expressed concern this way:

> We need advance planning to insure that there will be joint use of right of way ...new construction expenditures by right of way users include roads, highways, bridges, telephone and telegraph lines, power lines and gas and oil lines ...We are willing to take joint easements with any other authority when we have a common interest ...this gospel of liaison and advance planning needs to be preached and practiced far more than it is.[4]

Others have expressed concern in another way:

> ...the public, who carries the burden of all of the cost on both sides (the private and public sectors), suffers ...by joint use and planning, you can make money...[5]

Still others have voiced their concern about the growing complexities of right of way acquisition and the multiplicity of rights of way in expanding and suburban developments by stressing programs of coordination and cooperation from the beginning.[6]

A notable example of joint use of right of way can be found along the Alcan Highway where it skirts a part of the Firasen River in Alaska. The highway, communication facilities, a railroad and an electric power transmission line share the right of way.[7]

With the advent of more extra high voltage (EHV) 500 to 1000 kv transmission lines, which require wider rights of way and which will have to be still wider as voltages increase, there arises the more difficult problem of educating property owners to appreciate the necessity for wider and wider rights of way.[8] The joint use of rights of way can soften the growing revolt against the use of more and more land for transmission lines and their impact on adjacent areas.

Possibilities for the joint use of such land are now being judiciously explored.[9] It has been said that the right of way function now is considered to rank among the top five problems of electric utilities.[10] From being an inconsequential percentage of the overall investment in transmission lines, today the cost for right of way has risen to 25 to 50 per cent and in some cases even more.[11] The executive branch of the Federal Government also has expressed itself. The 1965 White House Conference on Natural Beauty contained a message for the utilities, "...make greater joint use of rights of way."[12]

At the national seminar of the American Right of Way Association of 1962, the subject of joint use of rights of way by public and governmental jurisdictions occupied much of the program by the participants.[13] Also, the American Society of Appraisers has urged that rights of way be used jointly by utilities and other agencies.[14]

The acquisition of right of way for power companies has become of more concern during the last decade because of: 1) rising cost of land; 2) public awareness of the impact, either real or intangible, of transmission lines on the environment; and 3) the need to expand electric power facilities. Some of the utilities' concern may be alleviated

by joint use and possibly joint acquisition of transmission rights of way.

Historical Background

Utility companies, with few exceptions, have only in recent years begun to consider alternate uses for their land in urban areas. Most joint uses that have occurred have been in rural and undeveloped areas of power companies' service areas. This is particularly so on lands around hydroelectric facilities.[15] Reservoirs and their adjacent water sheds have been used for recreation, camping, picnicking, boating, and like activities.[16] Some utility companies, such as the Southern California Edison Company, have set up special divisions within their organizations for the administration of public recreation areas on their fee-owned lands.[17] However, the aforementioned uses are at locations which are not representative of the subject of this study, but they do indicate that the joint use of utility company property has occurred and consideration is now being given to rights of way in urban areas.[18]

In the early days when an electric transmission line was constructed to serve cities and towns, every effort was made to locate such facilities in rural or undeveloped areas. For the most part, the lands traversed by transmission lines were not intensively used. Pasture and agriculture constituted much of the land use and little interference with the owner's use was created by the existence of the power transmission line and vice versa. Encroachments were infrequent on the utility rights of way.

Today, the boundaries of urban and suburban areas have pushed out-

ward and engulf the transmission lines of yesteryear. The cities and towns in many instances are now the exploding metropolitan areas of today and as such are demanding more electrical power. As a consequence, the utility companies are called upon to construct additional facilities which must often be located where the land is used very intensively. New rights of way are required as well as increased capacity of existing facilities on present rights of way.

In some suburban areas transmission line rights of way were being used for purposes other than only electric power transmission. When the rights of way were joined by alternate uses, some utilities discovered economies in the cost of maintenance. Some of the rights of way even produced sizable revenues at a minimum of trouble to the company. The utility's image in the community was also improved.[19] The utility industry seems to be giving serious consideration to joint use of their transmission rights of way, particularly in urban areas.

CHAPTER II

THE ELECTRIC POWER TRANSMISSION LINE AND ITS RIGHT OF WAY

In order to identify the role of the transmission line as a part of the electric power system, a brief description of the principal parts of a typical system is necessary. The major components are 1) the generation system, 2) the transmission system, and 3) the distribution system (see Figure 1). Electricity moves from point of generation to point of utlimate use in a continuous flow at the speed of light -- 186,000 miles per second. In short, the energy (electricity) is created (generated) and cannot be stored. It is taken in bulk (transmitted) to designated points for delivery (distribution) to the consumer.

Although the composition of an electric power system is not really as simple as just stated, for it includes many sub-parts for each of the elements mentioned, only a general description will be given with the transmission line portion of the power system emphasized in more detail.

The Electric Power System

The generation portion of an electric power system is the beginning point -- where the energy is manufactured at 2,500 to 20,000 volts (2.5 to 20 kv). In dollars per kilowatt hour (1962 figures), it accounts for about 50 per cent of the cost of a complete system. Power plants take various forms depending on the type of production source. Some

utilize the heat (energy) of fuels such as coal, oil, and gas or nuclear fission. Some use the energy of falling water. The energy from these sources is converted into electrical current -- the power for the electrical system.[20] Thus the use of chemical or kinetic energy is transformed into electrical energy for general consumption.

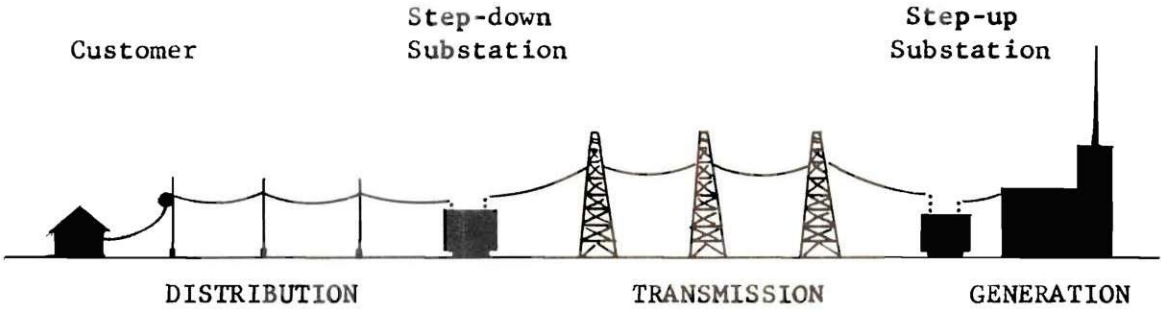

Figure 1.

Simplified Diagram of an Electric Power System

The transportation of the product (electricity) to the market place (load centers), as well as the interconnection of major load centers, is accomplished by the transmission system at varying high and extra high voltages. Although it accounts for only about 10 per cent of a complete electric power system in cost per kilowatt hour, the transmission system nonetheless plays an important role in the overall picture. It consists of more than just the lines that convey electrical energy. Although the overhead lines are more obvious, transmission facilities also include a step-up substation at the point of generation to increase the voltage prior to transmission and step-down substations

to reduce the current to usable voltages at the terminal points of bulk delivery. Thus, these three components comprise the basic elements of a transmission system. In contrast to low generation voltages, transmission voltages usually range from 33kv to 500kv and 750kv to 1000kv are being tried with promising results.

Transmission lines are the highways for transporting bulk electrical energy. They traverse the countryside, usually via their own rights of way, and form a network through their service areas. The routes of the transmission lines are determined by operational, engineering, and economic factors, with the question of aesthetic compatibility beginning to play a more prominent role in matters of line location.

For the most part, transmission lines are located overhead. Tall steel towers and wood or concrete poles support the lines. The number of miles of underground lines is small with respect to the total. Cost is the major factor. Underground installations, with their cables, cooling systems, and terminal connections cost from ten to forty times the amount of overhead lines.[21] With present technology, overhead line capabilities are much greater than underground.[22]

Transmission lines have no major operational impact on adjacent lands other than an occasional interference with radio or television reception. The greatest objection expressed, although recent studies have shown it to be unfounded, is that overhead lines decrease adjacent property values.[23] Despite the conclusions presented in the studies, the lines do have an adverse effect on many adjacent land uses, particularly in urban areas.

A point of major concern in such areas is the large amount of land used for transmission line rights of way. In some communities these rights of way vary from 90 to 450 feet in width. This could amount to about 10 to 45 acres of land for every linear mile.

The distribution system, which usually accounts for nearly 40 per cent of the cost per kilowatt, is the most familiar portion of an electric power utility. It is the part which brings the electrical energy directly to dwelling units and places of business -- the "retail" end of the electrical system. From the time electricity passes through the step-down substation until it flows through the meter at the customer's premises, it generally travels through a number of circuits commonly known as primary distribution lines, secondary distribution lines, and service lines.[24] In urban areas distribution systems usually are located in public street rights of way or in utility easements on private property.

In the past ten years great strides have been made in new technology which is making the underground installation of electrical distribution systems an economic reality. The cost differential between overhead and underground construction has markedly been reduced. In some areas the reduction has reached the point where many of the distribution lines in new subdivisions are being placed underground at no extra charge.[25]

Characteristics of the Electric Power Transmission Line

The foregoing has only set the stage, so to speak, and established the role of the transmission line as a component of the electric power system. A detailed analysis of the transmission line will be made in

preparation for the evaluation of the feasibility of the joint use of its rights of way.

There are certain aspects of the transmission system which need to be discussed so that their relevance can be placed in proper perspective as a part of this study. Of major importance is AC (alternating current) compared to DC (direct current) as the form in which electric energy is transmitted. Secondly, the question of whether said current should be transported underground or overhead will be explored. The elements of design which aid in determining the ultimate width of rights of way -- voltage, the conductor, its insulation and supporting structure, as well as operation and maintenance matters -- will be examined. Also, the location of transmission lines and the methods of acquiring their rights of way will be reviewed.

DC versus AC

Direct current is unidirectional, i.e., the current always flows in the same direction, whereas alternating current reverses its direction at regular intervals.

Early in the history of electric power systems, the generation, transmission and utilization of electric energy was at low DC voltage. DC transmission is the simplest of all transportation techniques; however, since World War II practically all DC systems have been supplanted by AC systems, despite the former's inherent simplicity, because of the expensive terminal converters.[26]

The major visual difference in transmission lines is that a DC line has two conductors whereas an AC line has three. Such a savings in material, and possibly less right of way need, accounts for the fact that

a DC line costs about two-thirds that of an AC line. Also, a DC line has less loss of voltage, thus the cost per volt/mile is less. Despite these savings, DC can not be handled by transformers. Costly converters are needed. In short, a DC system has a low cost line but a high cost terminal facility when compared with an AC system.

For long, uninterrupted, overhead lines (500 miles or more), a DC line can compete costwise with AC.[27] However, if one were to view a map of all of the transmission lines in the United States, it would be nearly impossible to follow any one line for over 100 miles and not find a tap or an interconnection.[28] Because of the need to have intermediate taps and the economies derived from the interconnection of networks, the transmission of electrical energy will continue to be predominantly via AC systems. Examples of exceptions are the Pacific Northwest-Southwest Intertie -- two 750 kv DC lines about 800 miles in length, and the United States-Canada-New York line -- a 900 kv DC line approximately 300 miles long which will import hydroelectric power from Canada to the United States.[29]

All further discussion of electrical systems in this study will be concerned with the alternating current type. However, with the advent of a recent Swedish innovation, the mercury arc valve, which presents a potential economical terminal converter, renewed interest in DC transmission has been spurred.[30]

Underground vs. Overhead

The discussion concerning the distribution system indicated an established trend toward underground installations. Such is not the case with transmission lines. Although there are research and tests for

various kinds of underground cable, the cost differential is still too great and the application of technology too limited to establish a decided direction. The cost ratio is about 20 to 1 for underground.

"Transmission of power generally is by means of overhead lines. While underground is engineeringly feasible, practically it is costly. Therefore, overhead lines are to be with us for many years to come."[31] This was stated in 1959. Research conducted since that time, the results of which are reflected in the 1966 report to the Federal Power Commission, indicates no significant change. Unless developments for a more practical system to place transmission lines underground occur in the very near future, overhead transmission lines will be used for a long time. Slightly less than one per cent of the total transmission line mileage is underground.[32] The majority of the 1,600 miles of underground transmission lines occurs in areas of population congestion where costs warrant them. There will continue to be limited applications of underground transmission facilities.

It was recently reported that the present investment in transmission lines in the United States is about eleven billion dollars. To place this system underground would cost approximately 220 billion dollars. With the total investment in all electric plants and equipment of the entire industry amounting to 70 billion dollars, it is safe to say that overhead transmission lines will be here for awhile.[33] However, Charles F. Avila, Edison Electric Institute (EEI) President, reports that the industry "has not swept the problem of overhead lines under the carpet." He points out that the EEI has funded 17 million dollars for underground transmission research.[34]

The consensus seems to be that regardless of when a "break through" in the search for an economical underground conductor occurs (5 years-10 years?), the hundreds of thousands of miles of overhead transmission lines which exist today, as well as those proposed, will have to be lived with for years to come. With the trend in metropolitan centers toward the urbanization of electrical power system service areas, (e.g., the Detroit Edison Company's present service area is sixteen per cent urbanized with the prediction that by the year 2,000 more than fifty per cent will be urban) the joint use of utility rights of way is of significance.[35]

The question, "when all goes underground, what then of the rights of way"? will most likely be asked. Regardless of location, above or below ground, a right of way will be needed.*

The overhead transmission line, as an element of the urban environment, will be reviewed later in more detail. The design considerations, those elements which have an influence on the width of rights of way for overhead transmission lines, will be discussed next.

Design Considerations

The goal of joint use of transmission rights of way is directly related to the space available under the transmission line; therefore, the resultant usable volume is dependent on the design of the line. The

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* It has been noted in the review of some of the legal instruments conveying an easement to the utility company that words containing the following thought are used "...to use without further payment, upon, over and across that certain tract or parcel..." with no mention of "under" or "in" thus possibly precluding the ability of the utility to place transmission lines underground in such rights of way without incurring further payment for the right to do so when such a time becomes propitious.

elements which determine the design of the transmission line and subsequently its right of way width will be explored.

Voltage. Line voltage is the key element which determines the other elements of design. Generally 69,000 volts (69 kv) and upwards are used for the transmission of bulk electrical energy. The higher the voltage, the larger the conductor size, the greater the separation of conductors and the more insulators needed. All of these increase the weight to be carried by the supporting structures which, in turn, determines the size, configuration, and spacing of the structures. The various combinations of elements determine the minimum right of way width necessary for a particular transmission line. For example, the Arkansas Power and Light Company has determined that a line voltage of 72 kv requires a right of way width of 60 feet utilizing single poles, 100 feet for H-frame wooden poles with 115 kv, 138 kv, or 161 kv lines, and a width of 125 feet for steel towers which support 230 kv lines.[36] Most of the high voltage lines in the United States do not exceed 230 kv. However, 345 kv lines are becoming more common and there are some 500 kv lines in use with more to come. A few 750 kv lines are under construction.[37] With the advent of extra high voltage (EHV) lines comes the need for wider and wider rights of way.

Conductor. The lines which the public sees hanging from the poles of an electrical power system are known as conductors. For alternating current systems, three conductors are used; therefore, a "line" always means at least three conductors. The conductors generally vary in size in relation to the voltage to be transported.

Transporting electrical energy generates heat; therefore, the more

energy the larger the conductor. However, a single conductor cannot be too large or it begins to lose its effectiveness. To form a conductor for EHV lines, groups of wires are bundled to reduce the electrical breakdown of the air at the surface of the conductor.

Generally conductors are spaced either vertically or horizontally. The environment through which a line passes will, in part, determine whether the spacing will be horizontal or vertical. The conductor will, in turn, largely determine the amount of right of way required.

In arriving at the configuration the line is to take, consideration must be given to such elements as conductor spacing, clearance of conductor, and grounding for lightning. Conductors must be far enough apart to prevent "flashover" between them, both vertically and horizontally, and the possibility of slapping together in a high wind. When ice drops from an iced over conductor, the sudden release of weight will make the conductor abruptly move upward like the twanging of a bass violin string. Sufficient separation must be maintained to guard against this reaction, particularly at mid-span. Adequate clearance between a conductor and its supporting structure is another factor of line design. Also, a safe clearance must be maintained between conductors of one line and structures and conductors of an adjacent parallel line. A very pertinent clearance factor is the distance between a conductor and the ground, vegetation, or other objects over which it passes. This type of clearance is most important when joint use of a right of way is being considered.

Some representative minimum clearance distances from the ground, as spelled out in the National Electrical Safety Code,[38] are:

115 kv ... 22.6 feet
138 ... 23.1
161 ... 23.6
230 ... 25.0
345 ... 27.3
500 kv ... 30.4 feet

For instance, the required clearance over bridges is 12 feet for the first 50 kv and 0.4 inch for each kilovolt above 50 kv. Each power company, in the purview of the national code, must utilize minimum clearance dimensions of various kinds for design and construction purposes. The dimensions are necessary in computing the amount of right of way needed for any particular transmission line.

Sag of Conductor. The sag (catenary curve) of conductors between supporting structures is another important design consideration. The stress placed on a conductor, the clearance between a conductor and objects over which it passes, and the height and cross section of supporting structures are some of the elements of design which are interrelated with sag. Generally, sag varies from two to six feet per 100 feet of span.[39] Seldom do transmission lines have all of their spans between structures the same length. Consequently sags vary, which in turn may vary one or more of the interdependent design elements mentioned above. Wind load on a conductor also affects sag and is therefore an important element of design.

The point of maximum sag, which usually occurs at mid span between two structures, is also the point where the conductors are the closest to the object over which they pass. This is a critical point of consideration for the joint uses which may have some height to them.

Lightning Protection. The power transmission system, with its

high lines and structures, is most attractive to lightning; therefore, a means of protection must be provided. One or more overhead ground or static wires is generally attached to the pinnacle of each supporting structure, connecting it with the other structures. Thus, via the structure ground wires, the system is afforded protection. Conductors and ground wires must be far enough apart to prevent flashover, particularly from the "twanging" reaction previously mentioned.

In areas of frequent storms, the probability of transmission lines being struck by lightning increases, of course. The "isokeraunic level" -- the expected number of lightning strikes based on the aforementioned probability -- is the gauge used in designing for lightning impulses. Where a high isokeraunic level occurs, the lightning impulse level, as opposed to line voltage, becomes a primary design factor and will be the element used when determining right of way width.[40]

Insulation. The insulation of electric conductors over the transmission system is of prime importance for safety reasons. Probably few people are aware that the conductors of a transmission line are bare wires with no insulation covering. The necessary insulation for overhead transmission lines is provided by the air surrounding the conductors, thus the large separation between the three conductors of a line and the long strings of insulators, connected in various arrangements to the supporting structure, which insulate the conductor from its carrier. For a line carrying 345 kv, the string of insulators must be about ten feet long to insure that flashover will not occur between the conductor and its supporting steel tower.[41] The suspended, flexible string of insulators is usually composed of porcelain or glass discs. The higher the

line voltage, the more units are added to the string.

The relative disposition of insulators effects supporting structure size and right of way. The most common sight is the string of insulators dangling from a cross arm. An arrangement of insulators which restrains the free swinging of conductors, although requiring more insulation, will reduce the amount of right of way required.

At each voltage level a certain amount of clearance between conductor and carrying structure (steel construction in particular) is required to prevent flashover. As the technology of both insulation and conduction improves, less air gap will be necessary and the width of right of way can be further reduced.

Supporting Structures. When one thinks of electric power transmission lines, the image which usually comes to mind is a series of lace-like, tapered steel towers bounding across the landscape. That is the shape of the conventional transmission tower; however, there are many different designs and materials, each reflecting the use and environment of the particular line.

Metal structure types vary from a single pole to a variety of guyed and self-supporting towers. The single metal pole has insulators attached directly to it or to arms projecting from the pole. Span lengths between poles are less than between towers, thus more structures are required per mile of line. Self supporting towers (usually tapered, latticed steel structures) afford the greatest strength and stability. A variation is the narrow base tower which permits the use of narrower rights of way; however, since the narrow base tower has less stability, a proportionate closer spacing of the towers is necessary. Guyed

towers -- either the "V" or "Y" type and usually constructed of aluminum -- are supported at or near the base with the upper portions held in place by guy wires. Although the base is small, wide rights of way are usually required because of the guy wires. The long spans permitted by metal structures create a need for wide rights of way because of the side sway of the conductors and the need for the conductors to remain within the easement at all times.

Wood poles usually treated with a rot deterrent, have been extensively used for transmission structures because frequently they are more economical than metal. Generally they are of single pole design, with or without arms. Another type of wood structure is the H-frame which consists of two upright poles with a heavy cross arm giving it an H shape. Wood structures with varying diagonal cross and bracing members have also been constructed. Due to the limited strength of wood, spans are relatively short, which in turn often permits use of a narrower right of way because conductor side sway is less.

Concrete is a relatively new material for building transmission line structures. Precast steel-reinforced concrete poles, used singly or in various design arrangements resemble their wood counterparts. Because of its mass, a concrete structure requires less guying. Spans can be longer than between wood structures, but concrete can not as yet compete with metal for spanning great distances.

Guying of Structures. Guy wires are needed at times to give lateral stability to various structures. In almost all cases when a change of direction is necessary, guy wires are employed. The practice of criss-crossing guy wires, particularly when two or more lines are con-

structed parallel to one another can, at times, present a formidable barrier between the structures.

The pattern which the guy wires present can be a hindrance to certain alternate uses of the right of way. They can reduce or block the linear continuity of uses under the power lines. Therefore, the guy wires may need to be relocated or placed to benefit the joint users while at the same time maintaining the power company's design criteria of sound construction.

Spacing of Structures. The effective span between structures depends in part on the type of structure used. The terrain which a line is to traverse and the environment through which it must pass will suggest a structure configuration as well as the type of material to be used. For example, a power company building lines over predominantly flat terrain utilizes the following general spacings of structures with the precise distance dependent upon specific conditions: 1) single pole wood, 125 to 150 feet; 2) two pole wood, 350 to 800 feet; 3) single pole concrete, 200 to 330 feet; 4) two pole concrete, 425 to 750 feet; and 5) free standing steel tower for 500 kv EHV line, 750 to 1000 feet.[42] The distance between structures has an affect on the amount of right of way required because of the increased potential side sway of the conductors. Also the amount of unencumbered land area available for joint use purposes will depend on the spacing of structures.

A flat (horizontal) configuration of conductors will allow the greatest span between structures. Under that condition the height of the structures remains the same for all of the conductors, thus a near equal clearance at maximum sag is accomplished. Maintaining the same

minimum sag clearance via a vertical conductor configuration usually requires a closer structure spacing or an unusually tall supporting carrier.

Parallel Construction. Transmission lines constructed parallel and adjacent to one another must maintain similar design standards, particularly that of conductor separation. The contiguous conductors of adjacent lines must have enough clearance to protect against flashover due to side sway at mid span. Transmission lines of unequal spans complicate design problems. The width of the rights of way of two or more adjacent lines is generally less than the total widths of rights of way for an equal number of single lines.

Operation and Maintenance

The operation and maintenance of a high voltage transmission line are minimal. Periodic surveillance is carried out to detect insulators broken by lightning or maliciously damaged. Steel structures may require painting and wood structures may require chemical treatment to prevent rotting. Either treatment, depending on the environment, might be required at intervals of from 10 to 20 years. Replacement of treated wood structures may be necessary after 20 years. Many of the lines have paralleling roads for patrolling purposes and for providing access to structures for repair, maintenance and replacement purposes. Maintenance of the right of way -- cutting grass or trimming vegetation -- is programmed at a minimum. Many companies use chemicals to keep down growth while others encourage a low natural growth.

Location

The majority of transmission lines are found in rural and urban

fringe areas. However, high voltage lines do enter or cut through urban areas. Many of the lines in the urban fringe will, in the near future, be surrounded by urban uses.

High voltage and EHV lines are generally located on their own rights of way which may or may not be owned by the power company even though used exclusively for transmission line purposes. Existing public street rights of way are also used for transmission lines, but usually only the single pole type of structure is installed at these locations.

The route of a transmission line, particularly in urban areas, is determined by a combination of operational, engineering, and economic factors. The element of aesthetics is now coming to the fore and a route can be altered for that reason alone. More recently utility companies have become attuned to aesthetics, as in the case of the Iowa Power and Light Company. A double circuit 161 kv transmission line which crossed a future park in an urban renewal area was redesigned to meet the requirements of a beautification minded DeMoines River-front Commission.[43]

A recent editorial in one of the trade publications expressed it this way: "It is no longer enough for utilities to satisfy the traditional design parameters of economy and reliability. Today, public acceptability has become the new 'third dimension' of system design, as the public has become increasingly conscious and concerned with its environment and surroundings."[44]

Methods of Acquiring Right of Way

The voltage carried, the design of the supporting structures, and the various clearances between elements of the line determine the required right of way width. Once the width and location are determined, the process of acquisition can begin. There are four methods by which transmission rights of way are acquired -- fee title, modified fee, easement and franchise. Each of these has its own distinct advantages and disadvantages.

Fee Ownership

Fee title -- ownership of all of the rights in the land (sometimes known as title in fee simple) -- allows the utility company maximum control of its right of way. At locations where possible encroachments may be difficult to police, fee ownership of the right of way is preferred. Fee title also permits the utility to negotiate with others for joint usage without the possible encumbrances of a third party.

Modified Fee Title

As the title implies, modified fee is acquisition with less than full title. Certain limitations, exclusions, or restrictions are placed on the usage of the right of way even though it is owned by the utility company. This method is found in areas where the original grantors may wish to retain mineral rights or other elements paramount to but not in conflict with the transmission line. In some ways the modified fee title is similar to an easement.

Easement Interest

Easement is the most common method of acquisition. Ownership of the land is not purchased by the utility, only certain rights. Gen-

erally, the agreement spells out the width of the right of way, the facilities and appurtenant equipment that may be placed within it, the right of ingress and egress, and the right to keep the right of way clear of all obstructions. Usually the owner of the land is not prohibited from using it except where the grantee's use may be infringed upon.

It has been found through the experiences of right of way acquisition that when land is to remain open (rural), the easement is the better and less expensive method of acquiring rights of way. However, in urban, suburban, or soon to be urban areas, fee title is considered the best method.[45]

Franchise

Occasionally public street rights of way are used as a location for transmission lines in lieu of separate rights of way. Usually the right to use street rights of way for electric power line installations is granted the utility company by a franchise. However, the power company is subject to regulation by the local governing body of the area through which the line passes. And such installations are subject to relocation if the street is widened. Also, the utility becomes more readily susceptible to the scrutiny of the general public in matters of safety and aesthetics.

The next chapter discusses possible joint uses of transmission line rights of way.

CHAPTER III

POSSIBILITIES FOR THE JOINT USE OF ELECTRIC POWER TRANSMISSION RIGHTS OF WAY

Utility companies are spending millions of dollars annually for rights of way for transmission lines and therefore are the owners of extremely valuable assets. As such, they are responsible for keeping the rights of way intact for the purposes for which they were acquired. One of the purposes is to assure a location where electric power transmission facilities may be operated and maintained free from impairment and interference. The ideal solution from the utility's point of view would be rights of way with no encumbrances whatsoever. However, this ideal is not realistically attainable. Progress can not be stopped by the refusal on the part of utilities to allow some non-utility uses on their rights of way. Such joint uses must, of course, not only benefit the community but also, at the same time, not interfere with the utility's operations.

In urbanized areas of the country, particularly the metropolitan regions, the demand for land for residential, commercial, industrial, and recreational uses has caused land prices to soar. Land selling for such high prices does, of necessity, engender the most profitable use possible. The electric power transmission rights of way passing through these urbanized areas are viewed by many as potential land areas for urban uses. The open right of way strip acts as an invitation to those

who are in need of space to operate or expand. In such situations transmission rights of way are exposed to what many utility companies construe as most serious hazards and conflicting uses.[46]

To the utility company, any use of their rights of way other than for utility purposes is an encroachment. By definition, an encroachment is a trespass or unauthorized instrusion upon the property or rights of another. However, as commonly used in connection with utility rights of way, an encroachment is "any foreign use to the purpose for which the right of way was acquired."[47] Although utility companies no doubt would like to see their rights of way free of encroachments, no company desires to have its rights of way act as barriers to community growth and development. With this thought in mind, a number of utilities have prepared guides as an aid in administering transmission rights of way. Pacific Gas and Electric Company has prepared a Standard Practice which states the company's policy, namely:

> To permit the maximum use by others of the area within company rights of way provided such use and the manner in which it is exercised will not interfere with the company's rights or endanger its facilities. No other uses shall be permitted.[48]

The document goes on to define permissible and interfering uses.

When no detriment to construction and operation of utility transmission facilities exists, company policies could allow compatible joint uses of the right of way.

Joint Uses of Transmission Rights of Way

To be compatible with something is, by definition, to be capable of co-existing in harmony. Therefore, joint utilization of a power

transmission line right of way by a non-electrically oriented land use must be in harmony with not only the power lines but also with the land uses which exist or soon will exist adjacent to the right of way. All of the community's rules and regulations -- zoning laws, subdivision regulations, land development standards, etc. -- must be met by the uses of the transmission right of way and will, in all discussions herein, be assumed to be met.

Various alternatives for jointly using the transmission line right of way will need to be coordinated with adjoining land uses -- residential, commercial, industrial, recreational, etc. -- found in any urban area. Each of these uses will be discussed in general with selected ones examined in more detail. Of course, the most prevalent uses in a community are residential -- single and multi-family dwelling units.[49] The passage of large transmission lines in close proximity to residential units creates a swath of land which may become an asset rather than a liability to nearby residential land uses.

Residentially Oriented Uses

Utility transmission rights of way at times are particularly attractive and useful to home owners. When such a right of way is adjacent to their property it provides light, air, and open space. If the right of way falls within their property, which happens to be a lot in a subdivision, usually the lot has been enlarged to the extent of the right of way, or at least a part thereof, giving the owner more space.

The uses the residential property owner will attempt or desire to make of the right of way, whether it is on his lot or a separate parcel adjacent to his land, are many. Some of the more common ones

are landscaping, gardens, outdoor living areas, patios, barbecue pits, fireplaces, swimming pools, cabanas, fences, walls, buildings (extensions of or separate ones), driveways, parking areas, sewers, drains, and others. To determine utility companies experience and feelings concerning many of the above uses, a questionnaire* was sent to 65 selected utility companies having service areas in over three quarters of the states of the union. Forty-four of the 65 responded.

When the question of residential uses such as patios, barbecue pits, swimming pools, picnic areas, the common backyard uses, was asked, seven companies indicated they do not allow such uses, nineteen said they now have such uses, while thirteen pointed out that although they may or may not have such uses, they would allow these uses to take place on their transmission rights of way. However, of the 38 companies giving an answer to this particular question, about half of them qualified their answers. Most of the qualified answers indicated "would not permit swimming pools." Although the other uses were permissible, answers varied from "allowed only for additional yard area and approved for landscape or beautification purposes only" to "would allow slabs for patios, barbecue pits and picnic areas but no buildings for any of the uses." The concensus seemed to indicate that no structures would be permitted, which includes the swimming pool, but other "backyard uses" could reasonably take place in the transmission line rights of way.

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* See Appendix A for a list of utility companies to whom the questionnaire was sent, Appendix B for a copy of the questionnaire and Appendix C for a summary of answers with regard to specific joint uses.

Although the above discussion was limited to "backyard uses" of single family dwellings, the uses are also applicable to multiple family accommodations.

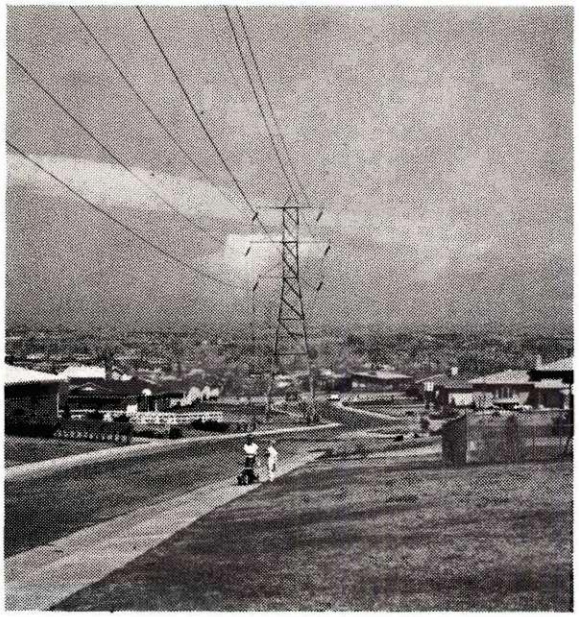
Transmission lines at times will occur along street rights of way through residential areas. The residential uses may or may not have come prior to the transmission line.

As part of the questionnaire utility companies were asked, where possible, to send photographs of representative joint uses. Figure 2 shows some representative views of residential areas traversed by transmission lines. The photograph on the left illustrates a double-circuit steel tower transmission line in a suburban residential area. This line was constructed while the area was farm land. The developer designed his street pattern to utilize the transmission line right of way where possible.[50] The other photograph shows some "backyard uses."

The mobile home is a specialized residential structure. The question of allowing this land use in transmission line rights of way was put to the utility companies. All but four of the utilities answering the question gave a definite "would not allow" response. In Figure 3 one can see part of a mobile home park under two transmission lines. With the strong "no" indicator from the utilities concerning mobile home parks, as well as the constant reiteration of no buildings or structures on the right of way, the ones which do exist probably are there as a result of negotiations for the rights of way.

Off Street Parking Use

The subject of allowing "off street parking" was asked of the utility companies. This use has applicability to a number of land users.



(a) Residential Street and Front Yard Uses

(b) Residential "Backyard Uses"

Figure 2.

Residentially Oriented Uses of Transmission Rights of Way

Two of the utilities stated they do not allow off street parking on their transmission rights of way. Twenty-eight indicated they now have such uses while sixteen said this use is allowed on their rights of way. Of the twenty-eight utilities now having off street parking on their transmission rights of way, two said that they prefer not to allow such uses and endeavor to discourage them. One company

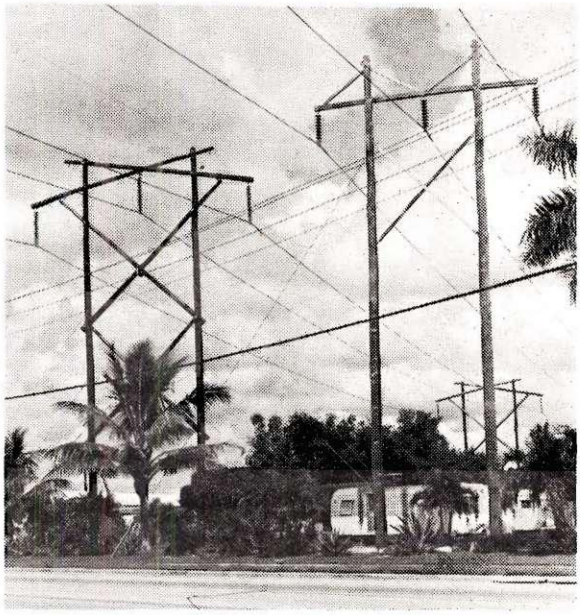


Figure 3.

Mobile Home Park

qualified its answer by indicating that, although it allows off street parking on the transmission rights of way, it restricts the use to locations not directly under the conductors.

There have been mixed feelings about the use of automobile parking on transmission rights of way. Pacific Gas and Electric Company operating personnel were fearful that such a use would constitute a fire hazard, but the company had no such experience pro or con. The Land Department of the company undertook a survey to find out the answer to the question, "do parked automobiles constitute a fire hazard"? Fire insurance companies and the Fire Rating Bureau were contacted and state and city fire marshalls were interviewed. The answer was that "parked automobiles are not considered a fire hazard, and that automobile parking lots are classed with untenanted or vacant land in fixing fire rating classifications."[51]

Although there may be no fire hazard, it has been found that under certain atmospheric conditions one can get a very mild shock from the build up of static electricity when one touches the door handle of a vehicle under a high voltage transmission line. Physically one is harmed no more than when one receives an electric shock by touching the automobile door handle after sliding across certain makes of auto seat covers. However, psychologically, receiving such a shock may become a bit disconcerting to an individual when it happens while his vehicle is parked on an electric power transmission line right of way. Also, the "once in a million" death hazard due to such an insignificant shock may deter some companies from allowing this use.

Figure 4 shows an off street parking area for an apartment com-

plex on the right of way of the transmission lines as well as under its conductors. This particular double tower line was constructed in a suburban area more than 50 years ago when the area was in agricultural use. The area has since been developed with urban uses which have engulfed the transmission line right of way.[52]

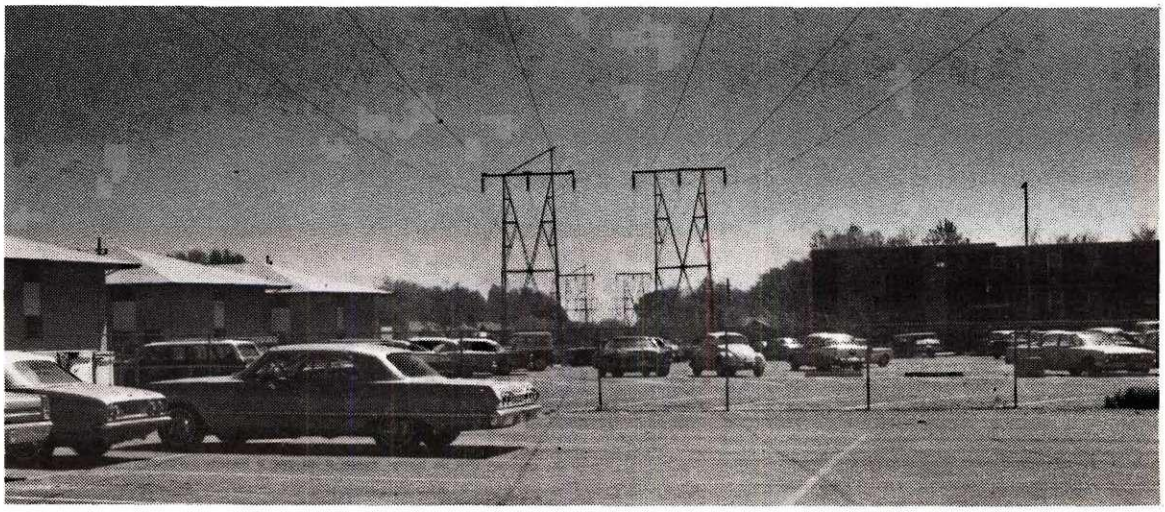


Figure 4.

Residential Off Street Parking Beneath Power Lines

Commercial and Industrial Oriented Uses

Commercial land uses through which a transmission line may pass vary from roadside strips and neighborhood service centers to central business district concentrations, as well as isolated commercial agglomerations. The central business district location will not be considered here, for in such intensely developed areas, transmission lines are seldom located and distribution lines usually are underground.

Commercial land uses adjacent to transmission lines can result in many encroachments or requests for use of a utility's transmission

line right of way. Some of these representative commercial land uses include buildings or building appurtenances such as loading docks and canopies, outdoor storage of equipment and material, underground storage of fuels, outdoor advertising signs, outdoor motion picture theatres, fences, walls, parking lots, railroad spurs and sidings, roads and driveways, race tracks, automotive drag strips, swimming pools and other recreational facilities, other utilities, commercial nurseries, and landscaping.

Requested uses or encroachments by industrial operations are similar in many respects to those of commercial activities possibly with the exception of the swimming pools and recreational facilities. Therefore, both of these users of land -- commercial and industrial -- will be discussed together.

The questionnaire reveals the thoughts of some utility companies concerning the joint use of many of the aforementioned commercial and industrial uses. The question concerning outdoor storage prompted an almost equal division in the response of pro and con. Some of those in the pro category qualified their answers with restrictions such as: 1) no explosives, 2) non-combustibles, 3) height restrictions, and 4) no storage of material within a specified distance from towers and poles. Figure 5 shows outdoor storage of cargo and boat trailers in an industrial area. This photo also shows a chain link fence. One company volunteered the information that they would not allow underground storage of fuels. As has been indicated, inflammable materials are generally not permitted. However, one utility stated that, because of very special circumstances for the location of a part of a

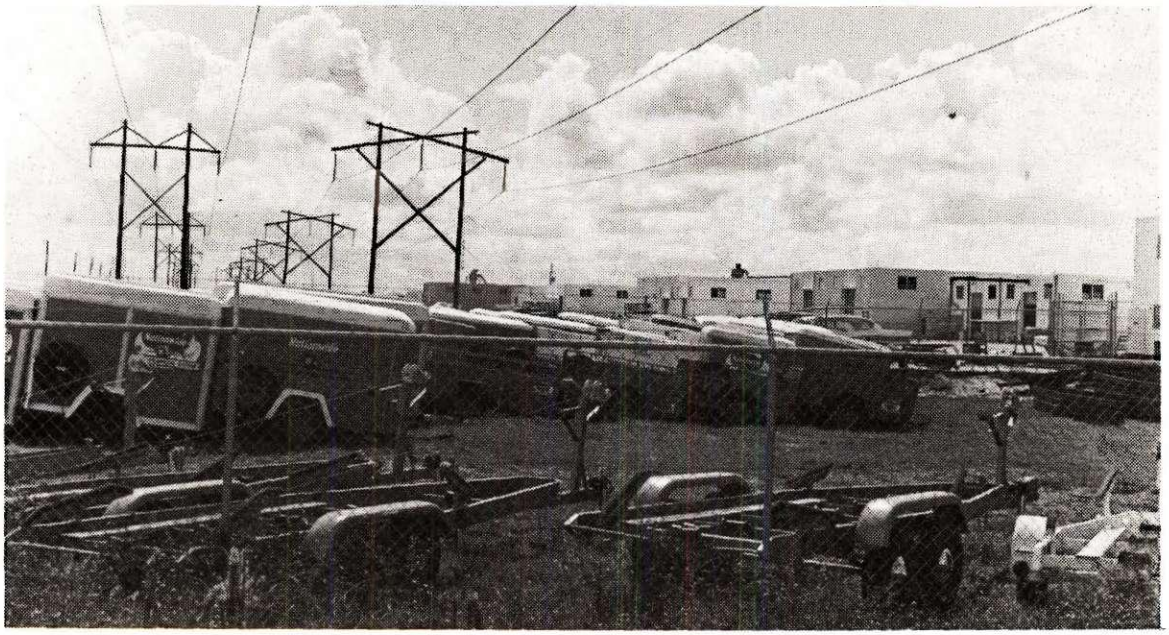


Figure 5.

Outdoor Storage of Equipment

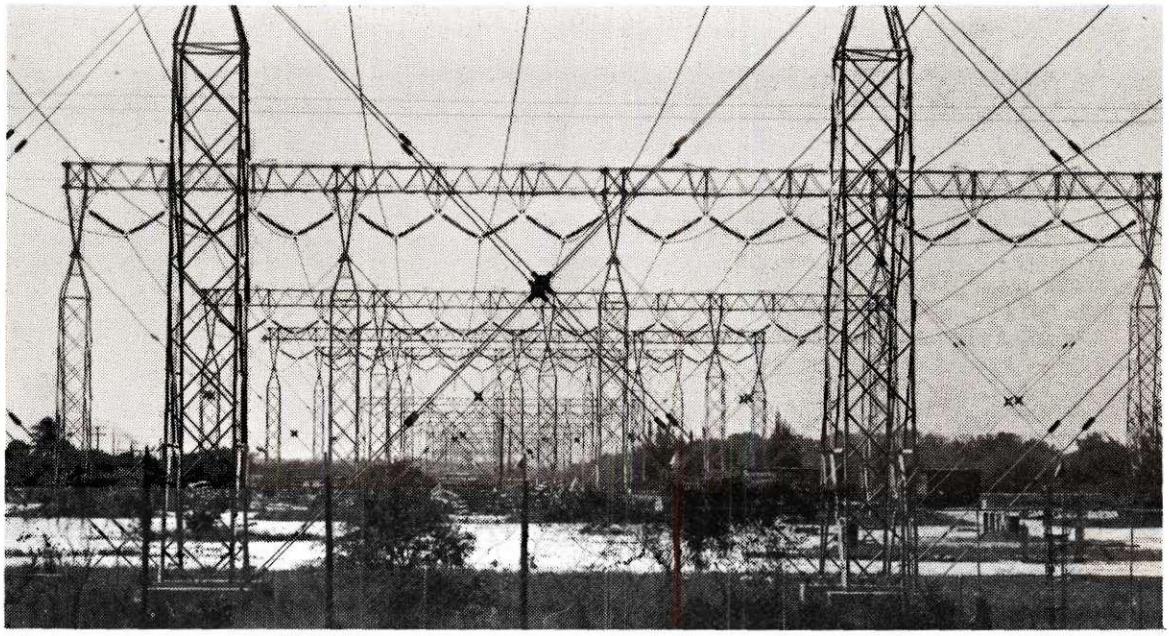
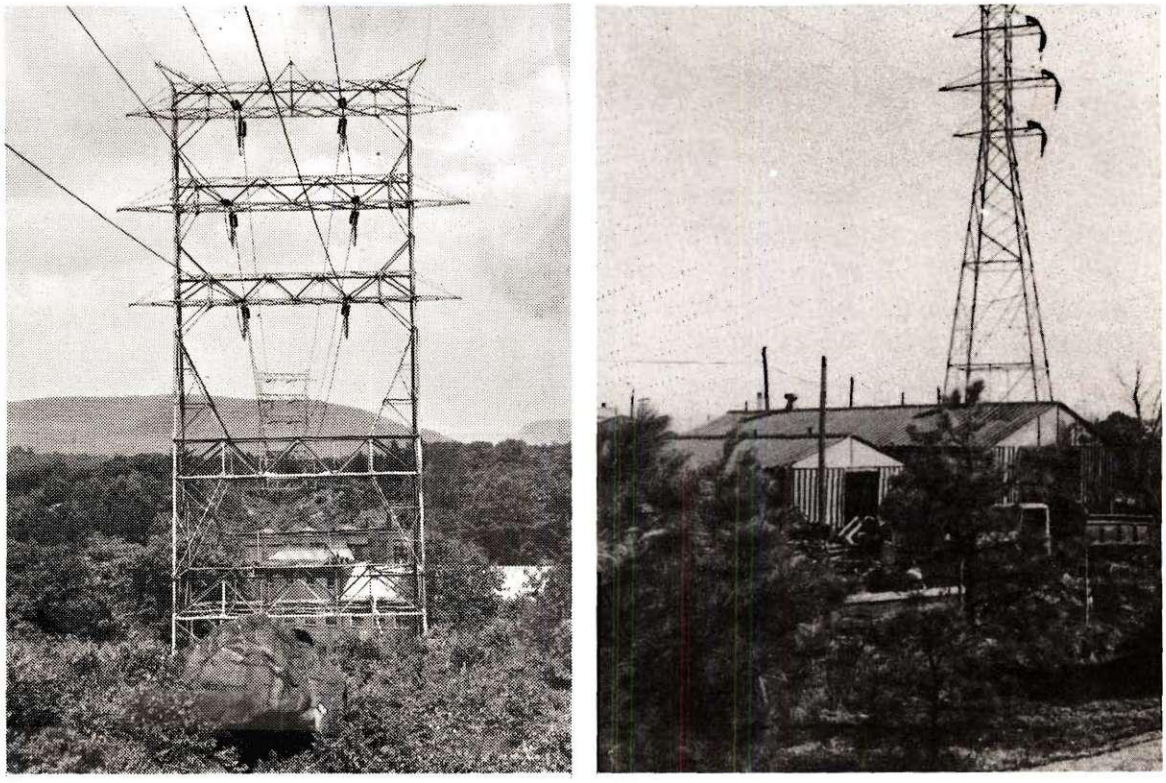


Figure 6.

Outdoor Storage of Material

transmission line right of way, it has allowed a commercial operation to store flammables under its lines only during the business daylight operating hours (see Figure 6). No time restrictions were placed on the storage of non-flammable products.

Although a few companies indicated they now have buildings in their rights of way, these uses usually are not permitted except under very special circumstances. Figure 7 shows photographs of buildings under power lines. Similarly, under special circumstances a gasoline service station has been permitted to remain under a transmission line.[53]



(a) Factory Buildings (b) Junk Yard

Figure 7.

Buildings Under Transmission Lines

Outdoor advertising signs, outdoor movie theatre structures, swimming pools, and the like are representative of the kinds of structures (as distinguished from buildings) which are generally not permitted on transmission line rights of way.

Public Assemblage Uses

Areas of public assemblage -- stadiums, amphi-theatres, the automobile standing areas of outdoor movie theatres, etc. -- were almost unanimously checked in the "would not allow" column of the questionnaire. Safety precautions alone are reason enough to prohibit such uses under transmission lines. Similarly, transient camper parks talleyed the same high "prohibit" response. Although the density of people at one location is not as great, the fact that there would be overnight accommodations for people and equipment prompted this response.

With regard to public assembly uses, although the activity areas are not permitted, the use of the power line right of way for off street parking purposes, as stated earlier, has been generally accepted as a permitted use by the utility companies.

Other Utility Uses

With respect to the use of transmission rights of way for other utilities (water, sewer, gas, telephone, etc.) the response was 100 per cent in the affirmative, although a few of the companies qualified their approval by indicating that such approval would be for crossings only with no lateral occupation of the electric power right of way.

Railroad and Highway Uses

Railroad and highway uses with the transmission line were indicated by more than 80 per cent of the companies responding. In a number

of instances the approval was qualified in that such uses could only cross the transmission line right of way. In a few cases the power company's rights to occupy are merely by virtue of license and they stated that the railroad generally owns the fee title to the right of way.

One company indicated a single right of way was used by three power lines and two double track rail lines.[54] Figure 8 shows the joint use of Philadelphia Electric Company's transmission lines and railroad uses.

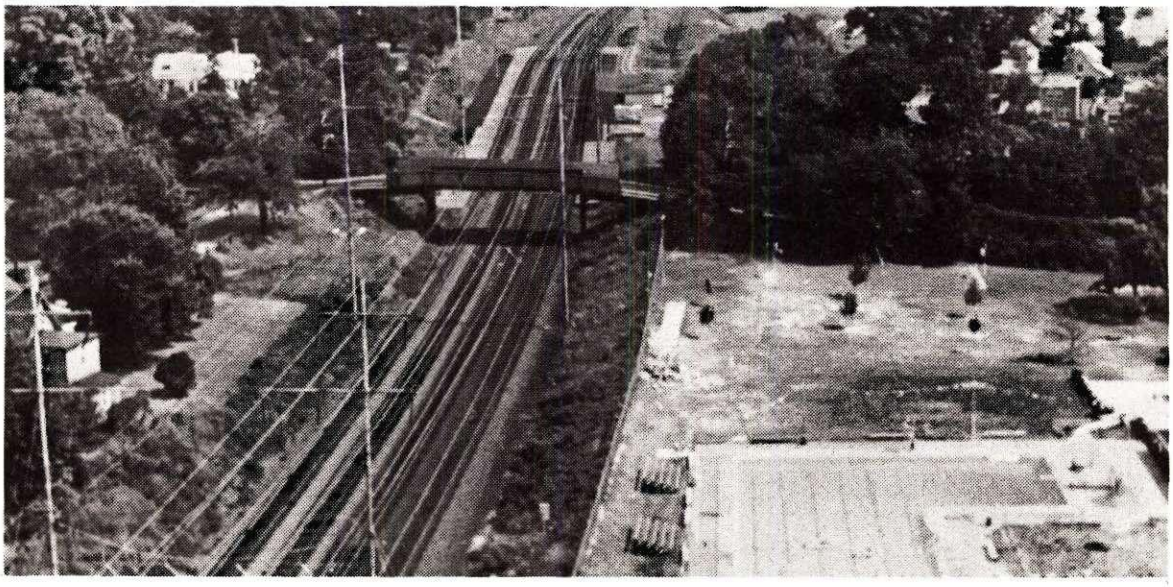
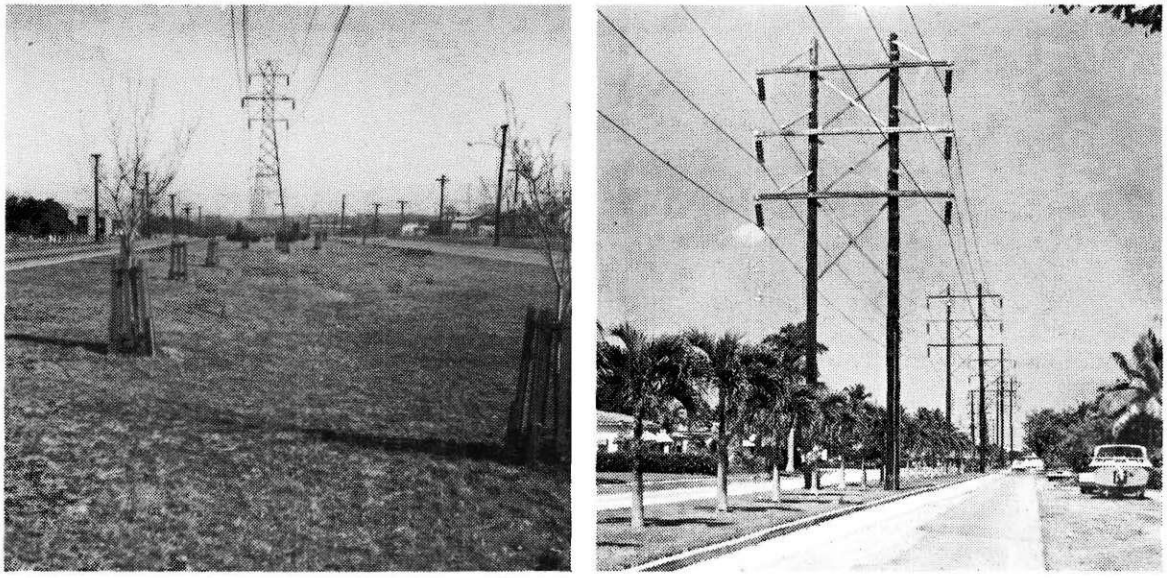


Figure 8.

Transmission Lines Within Railroad Right of Way

Many instances of joint use with a highway were reported. The utility company uses the street rights of way usually by virtue of a franchise. The use of median strips of divided highways were reported by some utilities. Figure 9 shows 155 kv transmission lines located in a median strip of a major arterial with recently planted trees as part



(a) Median of Major Arterial (b) Median of Local Road

Figure 9.

Transmission Lines Within Median Strip of Highway

of the divided highway landscaping program. The landscaping was done by the company.[55] Also, shown are two lines in the median of a local road. A 70 foot wide power right of way between two highways in Phoenix, Arizona, was recently transformed into a landscaped parkway (including trees) by the Arizona Public Service Company in conjunction with the City of Phoenix. The parkway will be maintained by the city. Although it is only four blocks in length at present, Mr. A. H. Forman, president and general manager of the power company states "The land is ideally suited to becoming an attractive addition for the residents of the area.... We hope this parkway can be developed even further in the future."[56]

Transit Uses

Transit uses jointly with power transmission rights of way were

indicated by 65 per cent of those answering the question. Here, as with railroad and highway uses, some companies qualified their answer by stating that they would allow only crossings of the transmission rights of way. A few utilities said they have not as yet had any experience with this type of joint use.

Pasture, Agricultural and Horticultural Uses

Pasture, agriculture, horticulture, tree and plant nurseries and grove and orchards were reported by the responding utilities to be from 100 per cent acceptable for the first three uses listed above to about 80 per cent acceptable for the latter uses as joint users of transmission rights of way.

The pasture, agriculture, and horticulture uses, with the exception of "no buildings permitted," were unqualified in their acceptability. Although these uses generally are discontinued, particularly the pasture uses, when urban activities begin to develop in the area, some agricultural and horticultural activities may continue to exist as compatible uses of the transmission line with their suburban neighbors. One company reported that these uses of their right of way land "brought many benefits in the way of pleasant relationships with our neighbors as a vast majority enjoy living next to these properties and seeing the crops grow."[57] Also, it was stated: "As the surrounding properties developed and agricultural and horticultural lands close to market continued to become scarce, we found a demand for lands which could be adapted for such use."[58] This company is looking forward to using in a similar way, properties which it is now acquiring for future use in areas which have a certainty to develop with urban uses.

As part of the right to continue limited agricultural and horticultural uses in suburban developed areas come many restrictions. Some of these include not only the usual no buildings, structures, and no storage of inflammable materials or explosives, but also prompt harvesting of crops, non-use of obnoxious types of fertilizer, rodent and pest control, and no parking of equipment or automobiles. Other restrictions are placed upon the use and the user's activities which are considered not only essential to the protection of the transmission lines but also good public relations.[59]

The response to joint use of transmission rights of way for tree and plant nurseries as well as for grove and orchard purposes engendered the many times mentioned qualification of no buildings and, in the case of the plant nursery, no greenhouses within the right of way. The most often stated qualification had to do with restricting the height of growth, particularly with the tree nursery and grove and orchard uses. Although seven companies indicated that they would not allow tree nurseries and nine said they prohibited groves and orchards, only one utility reported it would not permit the use of its transmission rights of way for plant nurseries.

The Holyoke Water Power Company recently became concerned over its brush control program within its transmission rights of way. The company, with the University of Massachusetts' Forestry Department, entered into a Christmas tree production program and study. Nine species of trees were used and their progress and peculiarities were recorded. The trees need only grow to a specific height before harvesting and the brush control problem, which prompted the study, was resolved.

The use, with its built in restrictions, is compatible with not only the utility use but also the adjacent property use. The study proved so successful that the company proposed to put most of its transmission rights of way which also pass through house developments to such use.[60] Other companies have related similar uses of their rights of way.

Orchards and groves, as reported by the utilities, require restrictions on the activities associated with their production, principally height limits for harvesting equipment utilized to pick the fruit.

Plant nurseries remain a part of the urban scene more frequently than the above mentioned uses. They require less area to be productive and they blend more easily with the neighboring urban landscaping. Figure 10 shows photographs of a plant nursery use on part of the transmission rights of way of two different utility companies.

The tree and plant nursery and grove and orchard uses gradually disappear as the land around them becomes urbanized. An example of this is reflected by a Southern California Edison Company representative who stated that "at one time we had many citrus groves on our lands, but due to subdivision of adjacent land such use has greatly diminished because it is unprofitable on small acreage."[61]

Park and Recreation Oriented Uses

The population explosion which has occurred in and about this nation's metropolitan areas has brought with it a dire need for land for public recreation. Space for park and recreation uses, as a vital part of the urban scene, is notoriously lacking in many communities, possibly because these uses were not considered when the urban areas were developed. Urban development by its very nature increases the dollar

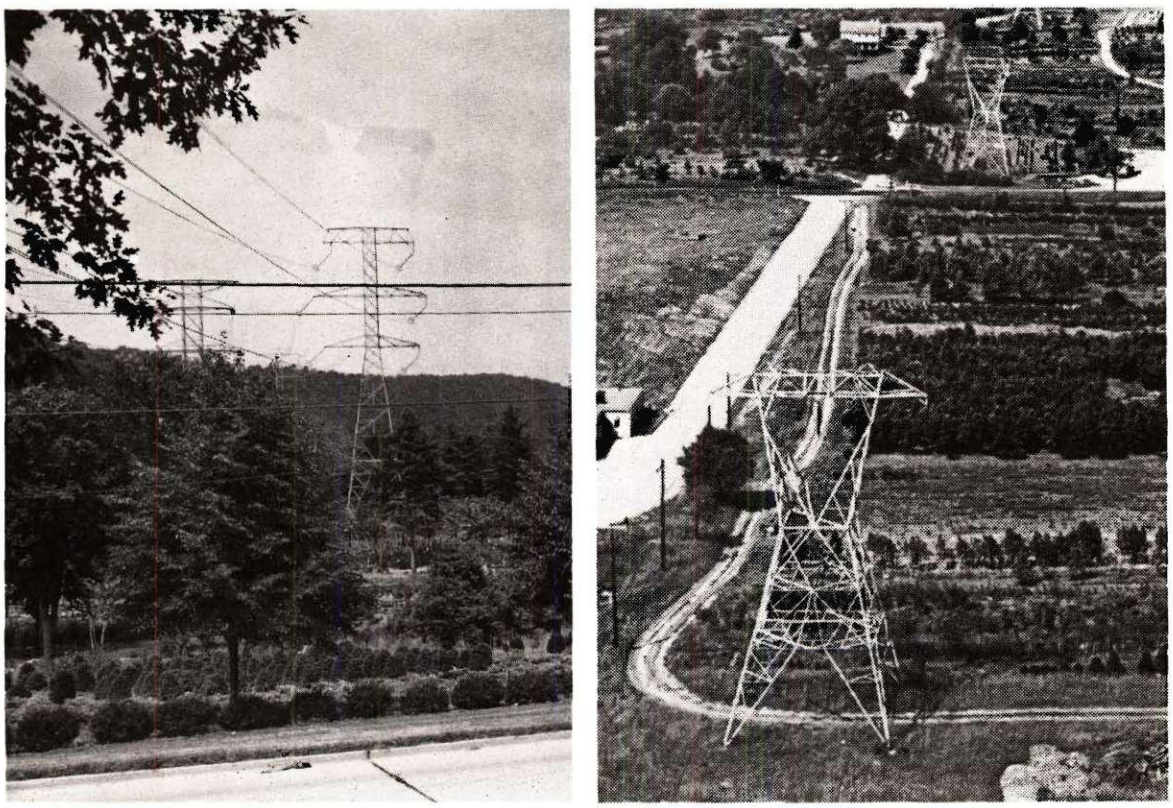


Figure 10.

Plant Nursery Uses

value of land which, in turn, reduces the potentiality for the acquisition of open space except at a high cost. Electric power company lands may offer some relief.

Although some utility companies have had long standing policies for opening their lands to the public for use except where occupancy was dangerous, it was not until about 1959 that some power companies began taking an active interest in creating facilities for public recreation.[62]

Although most of these recreation uses have taken place on water shed lands around reservoirs, an interesting sidelight has developed.

Representatives of some of the larger cities in the Pacific Gas and Electric Company's system suggested the utilization of transmission rights of way for parkway-type developments. The company agreed to the conversion of some right of way easements into such uses, where the proposed activity would not conflict with the needs of the utility service. The landscaping and maintenance of these "greenways" rests with the appropriate municipal agency and tree planting is confined to slow growing species. The company has received much favorable comment in the communities where the program exists. The communities, in turn, have been able to recapture, in part, open spaces which are now helping to remedy the lack of adequate community public recreation areas.[63]

Across the nation in the Northeast, similar thoughts occurred as an outgrowth of a study to improve the aesthetics of transmission lines. The following statement was proffered:

> Use of transmission line rights of way for recreational purposes should be explored....These rights of way could be ideal places to construct hiking, bicycle, horseback riding or snowmobile trails. The whole system of trails could start at a point near the highway, park or overlook ...cooperative agreements with property owners /would have to be developed/ in order to have a continuous system of trails....a study could be undertaken to use the land owned in fee to best advantage, tieing this land into other public-owned lands, such as /city, county or/ state parks and forests, to develop a continuous system of trails. Additional features which could be developed would be overnight camping shelters, nature trails, scenic points, trailside rest areas, golf courses and parks.[64]

Others also have been exploring the potentialities of using transmission line rights of way as linear parks as well as scenic "greenways" connecting into a continuous system various public parks.[65] Figure 11 shows a potential location for a "linear park" through a single family

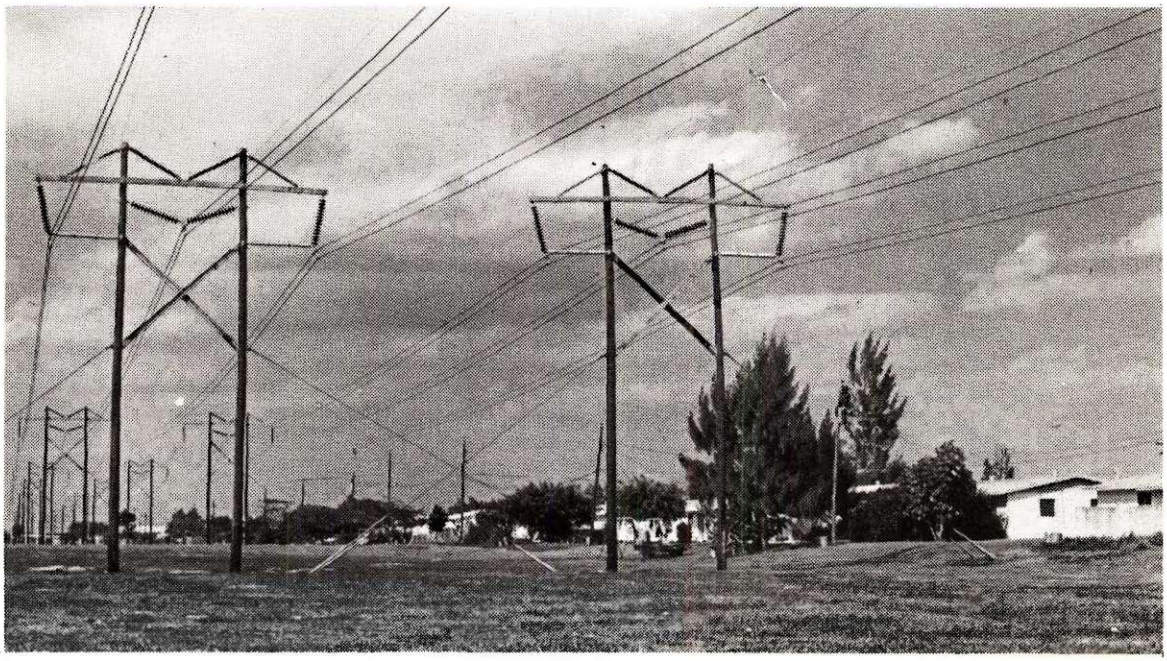


Figure 11.

Transmission Line Right of Way With Linear Park Potential

residential area. Note the guy wires which could obstruct the linear continuity, in which case they would need to be relocated.

A number of cities, towns and villages in northern Illinois have entered into agreements with the Commonwealth Edison Company to develop portions of 345 kv and 138 kv transmission line rights of way for recreational sites, parking areas and gardening activities. Playgrounds, baseball diamonds, etc., have been laid out in such a manner that the activities will not conflict with the operation and maintenance of the lines. By permission of the company, park districts, school districts, home improvement associations and churches are using portion of rights of way for recreation and other uses. In citing the value to the community of the agreement with Commonwealth Edison for use of

the company's property for Little League baseball fields, tennis and basketball courts, camping sites and Boy Scout activities, Mr. John Brown, Alderman of the City of Palos Heights and Chairman of the Public Relations Committee of the City Council, said:

> If it weren't for the availability of the utility's rights of way, we would have been hard put to find a place for recreation in Palos Heights. We feel fortunate in having the Commonwealth Edison property in our area and are happy that the company is sympathetic to the need for recreational areas and cooperative in the issuance of leases for this purpose.[66]

The results of the questionnaire, with respect to park and recreation activities as joint users of electric power transmission line rights of way, revealed that most of these uses either now exist or are allowed. The one use which most of the utility companies do not allow is the swimming pool. The pros and cons of this type of use have been discussed. One utility permits this use on a limited basis. Another indicated it controls the location of pools on the right of way and also the height and location of any fencing. Four companies said they now have such a use on their transmission line right of way.

The next most objectionable joint use indicated by the responding utilities was that of camp sites. Although twenty-one companies said they do not allow such a use, fifteen indicated they permit it and four reported that this type of use now exists in their service area. Two of the utilities that indicated they do allow recreational camp sites qualified their permissiveness on a limited basis with no structures.

The recreation court and field games category drew the next largest qualified approvals -- qualifications such as "no backstops, goal posts or similar structures," "on a limited basis," and "no per-

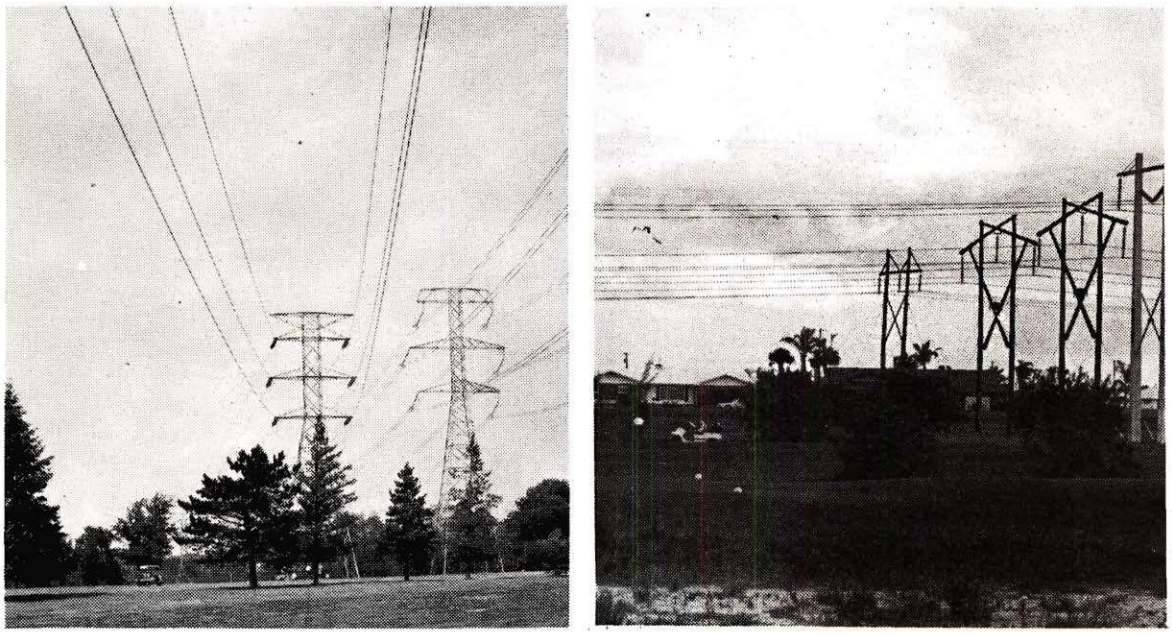


Figure 12.

Golf Course Uses

manent fixtures."

On the other hand, nature trails and sitting areas received no disapprovals. Bicycle, hiking, horseback riding and snowmobile trails were found objectionable by only one company. However, one utility did volunteer that it would not allow any ski runs with snow machines.

Picnic facilities and golf courses rated about the same -- 90 per cent of the responding companies allow or now have such joint uses while ten per cent indicated they do not permit them. Figure 12 shows various golf course uses.

The last of the park and recreation joint uses which the utility companies were asked to respond to -- open free play areas and archery ranges -- also rated about equally. Approximately 20 per cent said

they do not allow them and 30 per cent indicated they now have such uses or they would allow them. Some of the companies added that no kite or model airplane flying is permitted in open free play areas. Figure 13 illustrates such an open free play area beneath transmission lines. An additional activity was reported by one utility -- hunting. The company indicated this use now exists. Although a police pistol range can not be classified as recreation per se, it was reported by another company as a "now have" joint use.

Off street parking areas associated with park and recreation uses, are generally accepted by utility companies as permitted uses

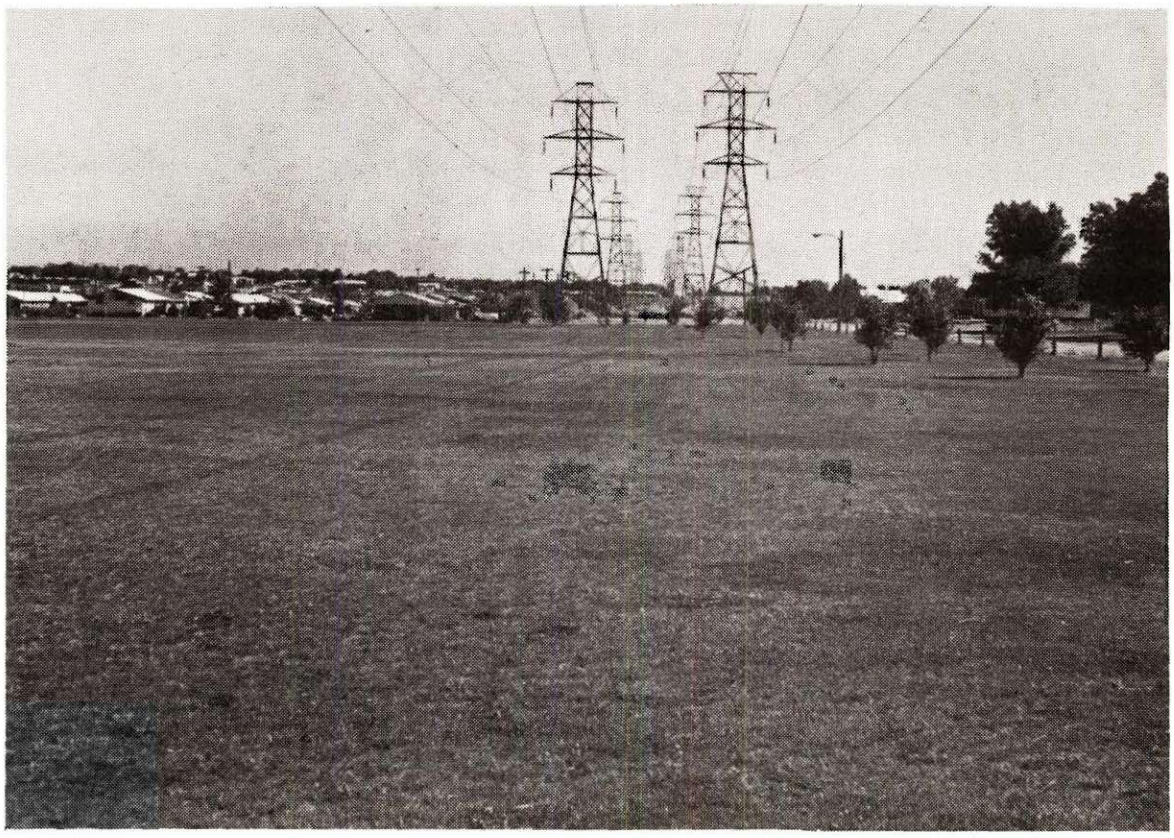


Figure 13.

Open Free Play Area Under Transmission Line Right of Way

Figure 14.

Golf Club Parking Lot

in such instances. Figure 14 shows a parking lot use at a golf club.

Figures 15 and 16 show photographs of various park and recreation joint uses of electric power transmission line rights of way.

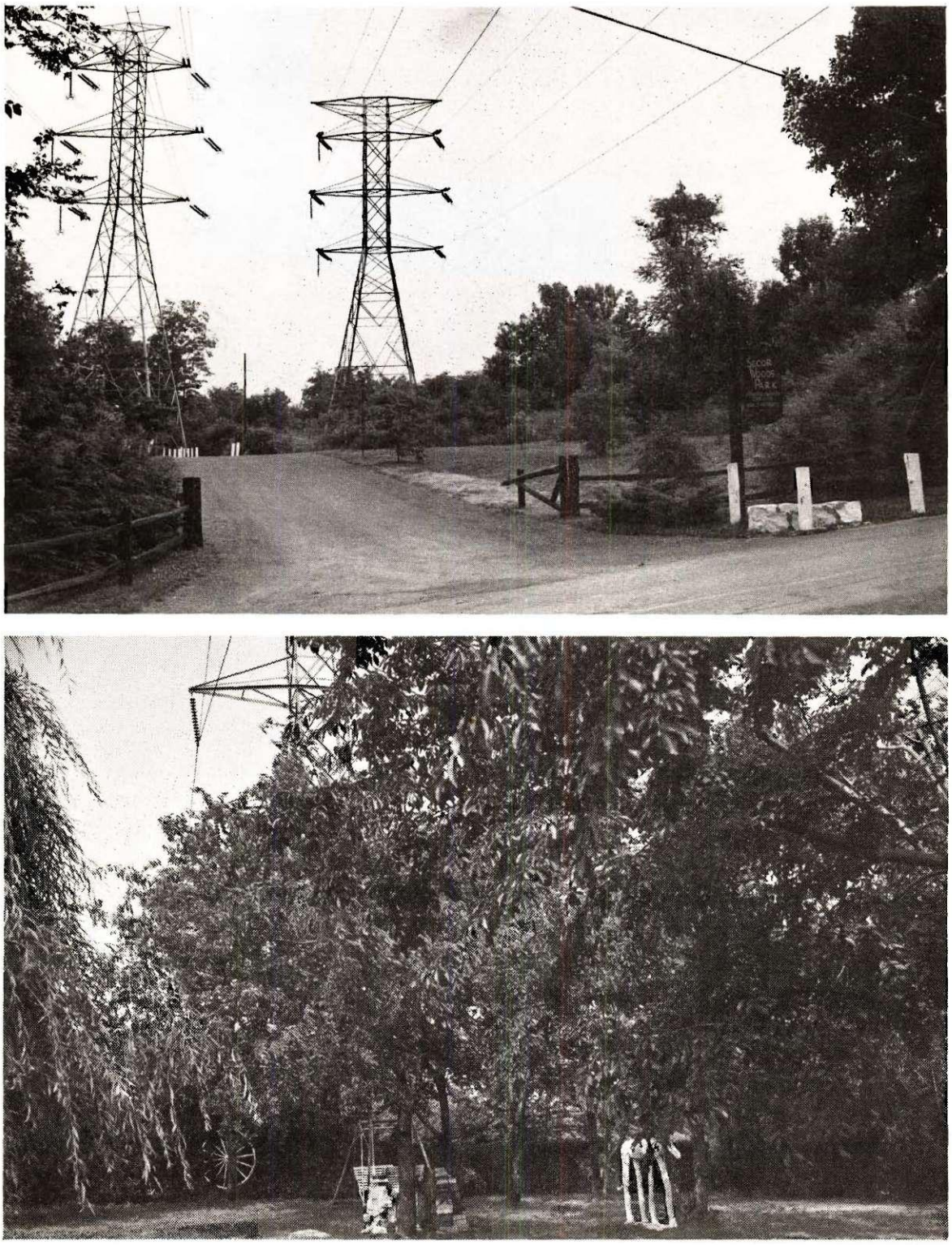


Figure 15.

Picnic Areas and Playground Uses Beneath Power Lines

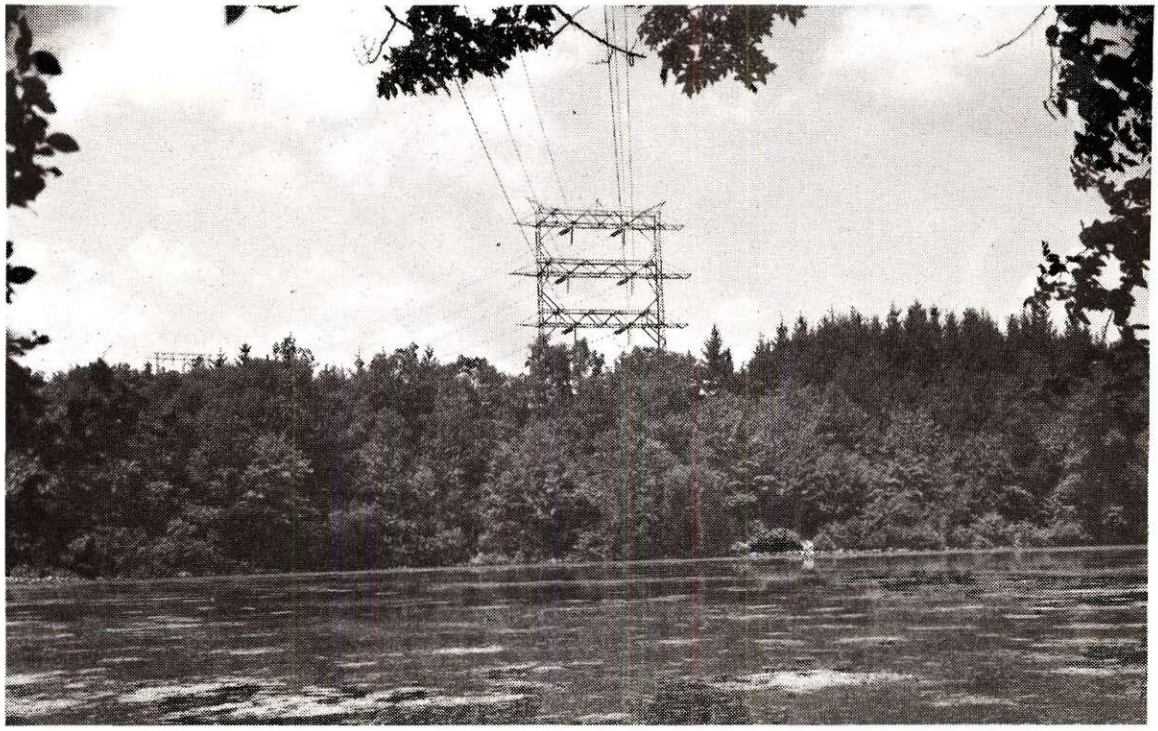


Figure 16.

Fishing and Hiking Trails

Advantages and Problems Associated With Joint Uses

Concomitant with the joint use of electric power transmission lines are certain advantages and problems to the utility, the joint user, and the community. The utility must derive reasonable results without undue harm from a joint use venture in order to justify doing so in the first place. The joint user must gain some appreciable benefit to compensate for the restrictions placed upon him. The community gains from joint utilization of transmission rights of way in that it supplements its usually limited lands.

Advantages of Joint Use

The advantages of joint use stated by the utility companies can

be summarized into these general categories: 1) improves public image, 2) results in good customer relations, 3) helps to lower maintenance costs, 4) reduces cost of right of way, and 5) provides maximum utilization of open space.

The utility companies are greatly concerned with their public image. How they look to the public -- the citizens, taxpayers, voters -- is constantly being evaluated for signs of adverse public opinion. One utility representative expressed the essence of this as follows:

> These rights of way extend for hundreds of miles through farming, industrial, commercial, and residential areas. Adjacent to these lands live thousands of our customers. ...These people deserve the greatest consideration. We like to think of them as friends.[67]

Therefore the appearance of their lands and the uses to which they are put are an important part of the utility company's total image.

Others have reported that their standing in the community improves when land is not allowed to lie dormant. Still others have related that the establishment of park uses has greatly enhanced the neighborhoods through which their lines pass as well as the company's image and customer relationships in the community. Figure 17 shows some of these uses.

The lowering of maintenance costs was reported by a number of the companies as a decided advantage. The responsibility of maintaining the right of way property, for the most part, lies with the joint user, thus relieving the company of a cost which it would otherwise have to bear had the property been left vacant. In dollars and cents one company estimated that it costs about $40 per acre per year (1960 figure) to keep their rights of way reasonably maintained.[68] When this figure is

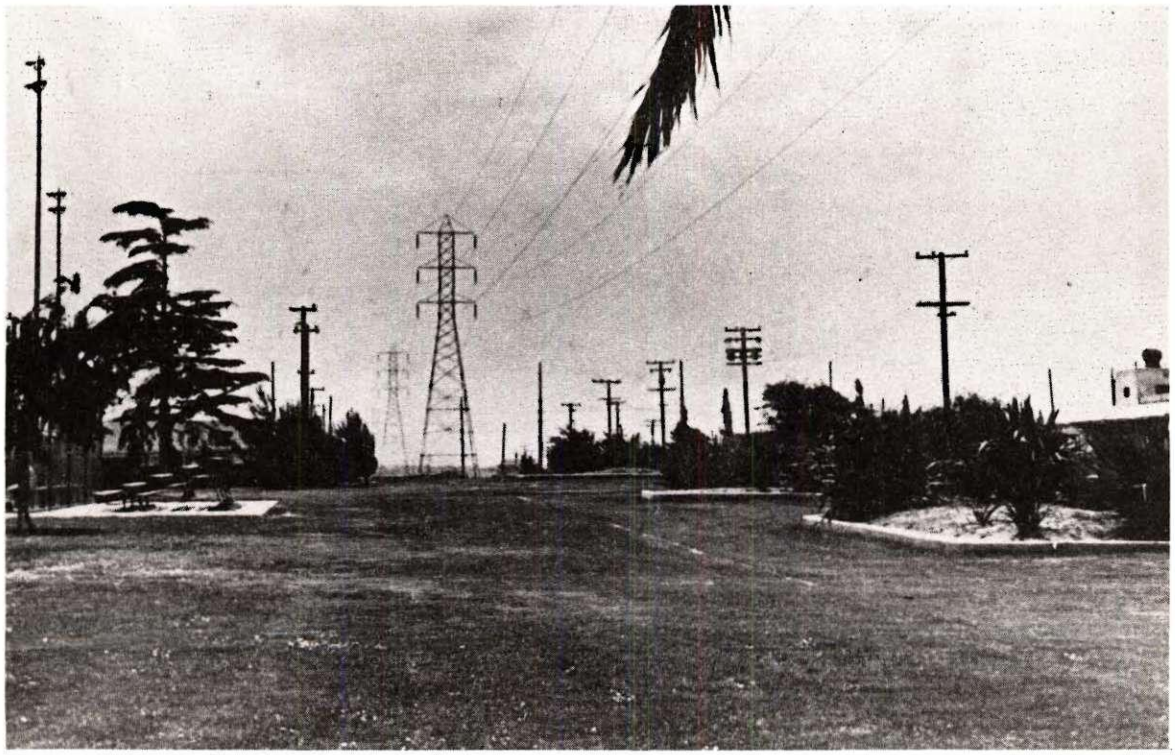


Figure 17.

Landscaped Park Uses

multiplied by the many thousands of acres of right of way a company may own, a sizable total results. When a right of way is shared by another utility, usually the maintenance cost is also shared.

The way a joint user maintains a right of way reflects on the utility company as well. Frequently the degree of maintenance is spelled out in an agreement between a utility and a joint user which also may reserve to the company the right to cancel the agreement if the user does not reasonably comply with the agreed upon maintenance standards.

Another advantage mentioned by a number of the responding companies is that joint use provides, at times, an opportunity for a utility to partially recover some of its initial investment through charges for the joint usage privilege. Such charges vary with land use and location. For instance one company stated that if the joint use is to be devoted to a commercial purpose, the company normally charges more than a nominal rental.[69] Other companies related that by permitting joint uses of their transmission rights of way, generally they find it easier to get the necessary lands required for their facilities.

Problems With Joint Use

Along with advantages of joint use of electric power transmission rights of way come problems. Some of these have occurred because of the lack of use of the land. Others have been due to poorly constructed or antiquated agreements, while still other problems have arisen because of misunderstandings. However, all of the problems seem to involve to some degree an array of laws, governmental regulations, property rights, company policies, economics, politics, public rela-

tions, safety, service obligations, and just plain people.[70]

It has been found by many companies that an absence of joint use of rights of way causes problems. Because of a barren appearance the land is conducive to dumping and other types of nuisance activities. In some instances adjacent lands have been graded so that the water run off drains on to the right of way. In other instances during subdivision development, top soil has been removed causing erosion problems. Such examples point to the validity of joint use.

But joint use itself is not without problems. The previously discussed "backyard uses" cause headaches. Some companies discourage these uses because, after a period of time, they take on an air of permanency. If the permit for such uses has to be revoked for operating or other purposes, ill feelings may be created. At times a joint use engenders a need for added safety precautions such as fences and anti-climbing devices on towers, particularly in public use areas. Maintenance of a line and the construction of new facilities in the right of way may be more difficult with certain types of joint uses. With regard to interference with line maintenance and emergency repairs, one company experienced this problem when people increased their use of the right of way over that allowed.

Many of the utilities responding to the questionnaire indicated they have experienced no unusual problems associated with any of their joint uses. One company said it feels the absence of any major problems is attributable to the fact that joint uses are subordinate to the primary purpose, both present and future, of the right of way.[71] A few companies reported they have difficulty in maintaining minimum clear-

ances and require more inspections beyond their normal line patrols to determine if the joint user is complying with the terms of his agreement with the company.

A number of the problems relating to joint uses of rights of way, seem to have been caused by agreements, obtained via the easement process, which no longer serve the purpose for which they were granted. The following classic example was related by a Southern California Edison Company representative:

> An easement for transmission right of way was obtained when the land was devoted to agricultural use. The provision that the company "could place gates in any fence then or hereinafter placed on the land" was included in the instrument conveying the easement to the company. The thought at the time was, of course, farm fences. The area began to develop into suburban residential uses and a subdivider recorded a subdivision plat which contained one of the company's 66 kv transmission line rights of way. Twenty five homes on 45 foot wide lots were built which had as their backyards, except for the three to five feet adjacent to rear doors, the entire 90 foot transmission line right of way.
>
> Some of the new property owners began to build fences across the right of way and were advised to remove them. Legal proceedings ensued. During the time the matter was in the courts many fences, walls, patios, etc. were constructed. Although the final judgment was in the company's favor the practical solution, in order to show consideration for the utility's customers and still maintain the rights of the company, was to prepare a three year license agreement for each property, allowing those items which the company could live with to remain and removing all others. A title check must be made every three years to be sure that any new owners are contacted to sign agreements.[72]

This example points up not only the problem of necessary constant vigilance by utility companies where certain joint uses are concerned, but also the importance of preparing agreements designed to meet the appropriatness of the situation. For the community's good, as well as the utility's, methods need to be employed through which the integrity of

transmission line rights of way can be maintained while allowing the maximum joint use that will serve the best interests of all concerned.

Methods By Which Joint Uses Are Implemented

An electric transmission line traverses land only because the utility has acquired certain "rights" to do so. Such "rights" vary in degree from having only permission to go across land with a power line and its appurtenances to the complete ownership of such land. Thus, the joint use to which a particular piece of transmission line right of way may be put depends first upon the "rights" a utility has in that land. These "rights" may vary every few hundred feet along a power line right of way.

The complete ownership of land (acquisition of all rights), commonly referred to as having "fee title," gives the greatest latitude of control by the utility for transmission line purposes and allows the most flexibility to implement compatible joint uses. However, one does not necessarily have to purchase complete ownership in order to achieve the objective of providing a right of way for the transmission line. By acquiring a limited interest in the land of another (an easement), a utility's goal can be achieved and the owner will also be able to use his land, although in a restricted way. This method by which a utility acquires its right of use can create some encumberances to achieving joint use of a power line right of way. Therefore, the way a joint use may come about differs with the "rights" a company has. Fee ownership requires only that negotiations take place between the utility and the prospective user. With an easement interest a prospective joint user,

other than the property owner, may have to get not only the consent of the utility company but the owner of the land as well.

Respondents to the questionnaire reported that the amount of transmission right of way acquired via fee title, as differentiated from the easement method, varied from "all rights of way except one /are/ owned in fee" to "although we do own some right of way in fee, over 95 per cent of our right of way is obtained by easements with the land owners." Likewise, the ways in which joint uses are achieved vary.

Many of the responding companies indicated that the methods of accomplishing joint uses of their rights of way are different for fee-owned lands than those for easements.

Joint Use Under Easements

Joint uses achieved on rights of way acquired by easements usually result from owners retaining rights to their lands for any lawful purpose not inconsistent with the utility's use. The easement forms reviewed, in connection with this study, although differing somewhat in format and content (most likely due to state laws), contained the essence of the following statement allowing a joint use of the right of way:

> GRANTOR RETAINS the right to use for Grantor's own purposes the land covered by said easement as long as such use does not interfere with the easement and rights herein granted. However, Grantor shall not erect, locate, or permit the erection or location of any structure or object of any type whatever within the easement strip described above, but Grantor may fence any or all of said property.[73]

Some of the joint use rights to be retained by the property owner as well as the general statement quoted above, may be spelled out in the instrument of conveyance.

An easement is generally granted to a utility, its successors and assigns, in perpetuity as long as it is used for utility purposes. Sometimes a reverter clause is inserted which returns the rights given the utility to the property owner if the transmission line is removed and the right of way is abandoned. This latter condition could have adverse repercussions upon joint uses previously granted.

As has been mentioned, permission of the holder of the underlying fee may have to be obtained before a joint use can take place. However, it seems the utility company would have the right to enter directly into joint use agreements without the consent of a third party if the following language were a part of the easement agreement:

> The Company shall have the right to assign or transfer, without limitation, all or any part of the perpetual right, privilege and easement of right of way granted herein.[74]

Many of the utilities replied that they have no "standard form" because each request for joint use must stand on its own merits and therefore requires separate and special handling. However, the content of agreements executed for joint use usually contain at least these essential elements: 1) consideration, the amount of which depends upon the use; 2) revocable and renewable clauses; 3) all liability must be assumed by the user; 4) the right of access at all times for operation, maintenance, construction, etc. is retained by the company; 5) the desired use and the particular limitations are spelled out; and 6) user assumes the responsibility for maintaining the right of way land and his facilities in an aesthetically pleasing manner.

One company uses the terminology "consent to common use" in its legal documents with joint users. The agreements vary from a simple

letter form of consent to a more formal consent agreement in either a recordable or non-recordable form. The recordable form, with consent agreements binding the successors of the parties to the initial agreement, is usually used where title to the underlying fee has a good possibility of changing hands. The common use agreements will then be known to the new parties and the items of consent will not inadvertently expand in scope beyond the originally agreed upon uses and restrictions.[75]

Easement encroachments by owners occur from time to time. Often they are not explicitly prohibited by the utilities, yet they may become encumberances on the rights of way. One company stated that when such an encroachment becomes known, an agreement is executed which contains these major items: 1) spells out the encroachment; 2) sets a time for removal if so required by the company and at no cost to the company; 3) states that the company may remove at once all encroachments and prohibits the owner from creating any encroachments which are not referred to and described; 4) provides that the agreement is personal; 5) requires that the owner agree to indemnify and hold harmless the company for any loss, damage, etc. arising from the use of the encroachments on the right of way; 6) spells out that if the agreement is defaulted by the owner, the company may terminate the agreement and remove all encroachments; and 7) states that the instrument executing the agreement will not be recorded.[76]

The joint use of highway and electric power line rights of way prompted one company to develop a series of documents for use in such instances. From time to time the state acquires lands which are subject

to easements previously acquired by the utility. The instruments for effectuating use -- Consent to Common Use Agreement and Joint Use Agreement -- were created for the purpose of defining their respective rights. The two documents contain many of the same provisions, their major difference being that when the company's land rights and facilities are to remain the same as originally acquired, the Consent to Common Use Agreement form is employed. The Joint Use Agreement form is used when all or part of such rights and facilities are to change. These two forms of agreement are used with either full access controlled freeways or conventional highways with no control of access. However, when the documents are used for fully controlled freeways the utility company restricts certain rights in favor of the joint user, namely:

> The company shall not, in the exercise of its rights under its easements, pass through or over the freeway fences constructed by the state across the Company's easements ...except in emergencies or when necessary to permit the construction, reconstruction or replacement of the Company's facilities.

Agreements with the state, as well as other political subdivisions (city or county), for highway or freeway joint use, preserves the original rights of the company. Also, they require that the joint user reimburse the company in the event the joint user requires the company to subsequently move its facilities.[77]

In many ways the methods of effecting joint use of transmission rights of way acquired under an easement are utilized when the land is owned in fee. The methods by which joint uses are implemented when the utility owns the right of way in fee will now be reviewed.

Joint Use Under Fee Ownership

Where joint use of transmission line rights of way is concerned,

the fee ownership of land by a utility can simplify the process of implementation for all. Negotiations are then between just two parties. The responsibilities of both company and user are readily discernible and the legal posture of each party is absolute. The courts do not require a company to prove that an encroachment or act interferes with its use as in the case of an easement.[78] Thus, the company's use is truly paramount and any joint uses will be subordinate to it.

Although a majority of the transmission rights of way are acquired by easements, the advantages of purchasing fee title are increasing, particularly at locations where rapid residential, commercial and industrial development appears to be certain.[79] Many of the respondents to the questionnaire concur that in urban areas it is most desirable to acquire rights of way in fee. One company stated:

> In urban and suburban areas in the Metropolitan Chicago area, the Company policy is to acquire rights of way in fee. Other compatible uses are then allowed...[80]

Again, as with the easement, there seems to be no "standard form" for joint uses of rights of way under fee ownership, although some companies do use a form. It appears each request for joint use is evaluated and a special agreement is drawn to cover a situation. The agreements contain similar basic provisions, as do those previously mentioned under easement interest.

Various joint use agreements submitted by a number of companies were examined during this study. Some are very brief and general while others go into great detail as to what is expected of both parties. Those which deal with a specific request in a highly urbanized area are usually the most detailed. Allowable joint uses may be covered by a

lease, license or grant of easement, depending on the situation.

Southern California Edison Company grants licenses (rather than leases) for the use of its fee-owned properties. The license versus lease was explained this way, "We grant licenses rather than leases because they do not grant any color of title and they are personal to the licensee."[81] It has been recently reported that this company has approximately 11,000 acres of their property under license for various uses.[82]

Other companies use the lease as well as the license and the grant of easement. Generally, the lease is made applicable to the property (a covenant running with the land) and therefore benefits not only the present owners but their successors and may or may not be assignable. The license is applicable to one entity (person, corporation, political body), does not affect the title of the land and is not assignable. While a grant of easement is similar to a lease, the former can grant the use forever. Therefore, the method used to implement a joint use of electric power transmission line right of way depends on what kind of control the company wishes to exercise over the joint use and the user.*

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* See Appendix D for examples of forms used for implementing joint uses of electric power transmission line rights of way in urban areas.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

The joint use of electric power transmission rights of way is increasing in frequency and scope throughout the United States. This has been brought about by the rapid urbanization of the utilities' service areas. The combination of "city" uses engulfing the earlier transmission line rights of way and the need to expand electric power transmission lines to meet the urban demand has forced both utilities and municipalities to re-evaluate their respective roles of service to their burgeoning populations. Although utility companies may prefer to have their rights of way void of other uses, they do not desire to have them act as community growth barriers.

The present cost of placing transmission, as opposed to distribution, lines underground is prohibitive except in areas of intensive use (e.g., central business districts); therefore, the vast majority of existing transmission lines, as well as those to be installed within the near future, will be overhead.

The foregoing discussions concerning possibilities for the joint use of transmission line rights of way, and the responses obtained from the questionnaire, indicate that the joint use of electric power line rights of way in urban areas is not only feasible but is being accomplished to a reasonable degree. The results are mutually beneficial to the utility, the joint user and the community.

Increasing costs for land, maintenance of rights of way, taxes, and liability insurance are beginning to tip the scales in favor of joint uses which can substantially reduce such expenses for each user. In other words, "share the cost and spread the rewards."

Existing joint uses of transmission line rights of way in urban areas, as evidenced by responses from the utility companies queried, reveal a broad variety of activities. Although types of joint uses permitted vary from company to company, it can be reasonably concluded that buildings and other structures, swimming pools, mobile homes and transient campers, facilities for public assemblage and activities which create fire hazards or directly interfere with a utility's goal are not allowed under normal circumstances.

Park and recreation activities, as part of a local government's open space system, offer the greatest potential for the joint use of transmission line rights of way. Many park and recreation and landscaping uses (including a variety of trees) are compatible with a power transmission line. A "linear park," geared to the pedestrian, bicyclist and equestrian, can do much to recapture lost open space for a community. It can also tie together scattered park sites of an area's open space system. Since the cost of right of way land is constantly going up, open space needs in urban areas can engender coalitions between electric utility companies and governments to acquire fee title to transmission rights of way which also can be used for park and recreation purposes.

The kind of land title a utility holds determines what rights the company has when dealing in the area of joint use. Fee ownership is

considered best in urban areas because of the control a utility can exercise and the comparatively simple process of implementing joint uses. Coordinated efforts by utilities and governments in the initial location of transmission line rights of way can be mutually beneficial to the companies and the communities in that compatible joint uses can be implemented more easily.

Having arrived at the conclusions just stated, there remains only the final task of formulating recommendations based on those conclusions. These are as follows:

Recommended: That local governments and electric utility companies in every part of the United States explore possibilities for the joint use of transmission line rights of way that will be mutually beneficial -- particularly in connection with park and recreation activities.

Recommended: That since right of way encroachment possibilities multiply with the number of property owners, utilities deal with as few land owners as possible. If one or a limited number of joint users could utilize the rights of way throughout a large part, if not all, of a utility's service area, conceivably a major portion of the company's encroachment woes would be eliminated. This is not to say there will be no problems, but at least, the utility will be dealing with vastly fewer joint users. It is further recommended that, wherever feasible, linear park and recreation systems fulfill the role of "one joint user." Short of this, it behooves a town, city, county, etc., to seriously discuss with the local electric utility what can be done with transmission rights of way which cut broad, fallow swaths through the community so that such lands may become assets to the locality through joint use.

Recommended: That local governments seek out the fee owned rights of way of electric utility companies as preferred areas for joint use because usually fewer encumberances will be involved in such negotiations.

Recommended: That, in areas of rapidly expanding urbanization, a coordinating procedure be formulated whereby electric utilities and local planning agencies will work toward the judicious location of future transmission rights of way in the community -- locations which will utilize the limited and therefore valuable land for the mutual benefit of both the company and the residents.

The multi-purpose electric transmission right of way must come about if substantial benefits are to ensue to surrounding areas. To accomplish this, the need for such joint use must be explained to the public before, during and after construction. The public must be given a sense of participation in a vital facet of their community's growth. In short, the joint use of electric power transmission rights of way in urban areas can decrease the burdens to both the utility and the taxpayer. It can improve the appearance and the civic life of a community by transforming barren open space into something far more useful and productive.

A P P E N D I C E S

A P P E N D I X A

LIST OF UTILITY COMPANIES TO WHOM QUESTIONNAIRE WAS SENT

Alabama Power Company
Birmingham, Alabama
American Electric Power Service Corporation
New York, New York
Appalachian Power Company
Roanoke, Virginia
Arizona Public Service Company
Phoenix, Arizona
Arkansas Power and Light Company
Little Rock, Arkansas
Atlantic City Electric Company
Atlantic City, New Jersey
Baltimore Gas and Electric Company
Baltimore, Maryland
Boston Edison Company
Boston, Massachusetts
Carolina Power and Light Company
Raleigh, North Carolina
Central Maine Power Company
Augusta, Maine
Central and South West Corporation
Wilmington, Delaware
Cincinnati Gas and Electric Company
Cincinnati, Ohio
Cleveland Electric Illuminating Company
Cleveland, Ohio
Commonwealth Edison Company
Chicago, Illinois
Consolidated Edison Company
New York, New York
Consumers Power Company
Jackson, Michigan
Dallas Power and Light Company
Dallas, Texas
Dayton Power and Light Company
Dayton, Ohio
Detroit Edison Company
Detroit, Michigan
Duquesne Light Company
Pittsburgh, Pennsylvania
Florida Power Corporation
St. Petersburg, Florida
Florida Power and Light Company
Miami, Florida

Georgia Power Company
Atlanta, Georgia
Gulf Power Company
Pensacola, Florida
Gulf States Utilities Company
Beaumont, Texas
Hartford Electric Light Company (The)
Wethersfield, Connecticut
Hawaiian Electric Company
Honolulu, Hawaii
Houston Lighting and Power Company
Houston, Texas
Illinois Power Company
Decatur, Illinois
Iowa Power and Light Company
Des Moines, Iowa
Kentucky Utilities Company
Lexington, Kentucky
Long Island Lighting Company
Mineola, New York
Los Angeles Department of Water and Power
Los Angeles, California
Louisiana Power and Light Company
New Orleans, Louisiana
Middle South Utilities, Incorporated
New York, New York
Mississippi Power Company
Gulfport, Mississippi
Mississippi Power and Light Company
Jackson, Mississippi
New England Power Company
Boston, Massachusetts
New Orleans Public Service, Incorporated
New Orleans, Louisiana
Niagara Mohawk Power Corporation
Syracuse, New York
Northeast Utilities Service Company
Boston, Massachusetts
Northern States Power Company
Minneapolis, Minnesota
Ohio Edison Company
Akron, Ohio
Ohio Power Company
Canton, Ohio
Oklahoma Gas and Electric Company
Oklahoma City, Oklahoma
Pacific Gas and Electric Company
San Francisco, California
Pennsylvania Power and Light Company
Allentown, Pennsylvania

Philadelphia Electric Company
Philadelphia, Pennsylvania
Portland General Electric Company
Portland, Oregon
Public Service Company of Colorado
Denver, Colorado
Public Service Company of Indiana, Incorporated
Plainfield, Indiana
Public Service Company of New Hampshire
Manchester, New Hampshire
Public Service Electric and Gas Company
Newark, New Jersey
Public Service Company of Oklahoma
Tulsa, Oklahoma
Puget Sound Power & Light Company
Bellevue, Washington
Rochester Gas and Electric Corporation
Rochester, New York
San Diego Gas and Electric Company
San Diego, California
Southern California Edison Company
Los Angeles, California
Southern Company (The)
Atlanta, Georgia
Tampa Electric Company
Tampa, Florida
Tennessee Valley Authority
Knoxville, Tennessee
Texas Utilities Company
Dallas, Texas
Toledo Edison Company
Toledo, Ohio
Virginia Electric and Power Company
Richmond, Virginia
Washington Water Power Company
Spokane, Washington

A P P E N D I X B

QUESTIONS ASKED UTILITY COMPANIES

Check Representative Joint Use Of Transmission Rights Of Way In Urban, Suburban, and Soon To Be Urban Locations In Your Service Area

Item	Representative Joint Use	Now Have	Would Allow	Would Not Allow
	Park Uses:			
1	nature trails			
2	picnic facilities			
3	sitting areas			
4	open free play areas			
5	camp sites			
	Recreation Uses:			
6	ball fields; baseball, soccer, rugby, football, etc.			
7	tennis, basketball, badminton courts			
8	bicycle, hiking, horseback riding, snowmobile trails, etc.			
9	golf course			
10	archery range			
11	swimming pools			
12	Outdoor storage of equipment			
13	Mobile home parks			
14	Transient camper parks			
15	Agricultural uses			
16	Horticultural uses			
17	Tree nurseries			
18	Plant nurseries			
19	Groves, orchards			
20	Other utilities: water, sewer, gas, telephone, etc.			
21	Pasture			
22	Off street parking			
23	Public assembly areas: stadiums, amphi-theatres, etc.			
24	Railroad			
25	Highway			
26	Transit			
27	Residential uses: patios, barbecue pits, swimming pools, picnic areas, etc.			

Relate Problems Associated With Joint Use

Relate Advantages In Permitting Joint Use

Relate Various Legal Approaches To Accomplish Joint Use. Send Representative Legal Forms Used As A "Contract" With Joint Users

Enclose Any Photographs Of Joint Use of Rights of Way

A P P E N D I X C

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Alabama Power Company			Appalachian Power Company			Arizona Public Service Company			Boston Edison Company[4]			Cincinnati Gas and Electric Company		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.		X		X	X			X			X		X	X	
2.		X		X	X			X				X	X	X	
3.		X		X	X		X				X		X	X	
4.		X		X	X		X				X				X
5.			X		X			X				X	X	X	
6.			X	X	X			X				X	X	X	
7.			X		X		X					X	X	X	
8.		X		X	X			X			X		X	X	
9.		X		X	X			X		X			X	X	
10.		X						X				X	X	X	
11.			X		X				X			X	X	X	
12.			X			X		X		X			X[5]		X[5]
13.			X			X			X			X	X	X	
14.			X			X			X			X	X	X	
15.	X			X	X		X			X			X	X	
16.	X			X	X		X				X		X	X	
17.	X			X	X			X			X		X	X	
18.	X			X[3]	X			X			X		X	X	
19.			X	X	X			X		X			X	X	
20.	X			X	X		X			X			X	X	
21.	X			X	X		X			X			X	X	
22.	X			X	X			X		X			X	X	
23.			X	X	X				X			X			X
24.	X	X[1]		X	X				X	X			X	X	
25.	X	X[1]		X	X				X			X	X	X	
26.	X	X[1]		X	X				X			X	X	X	
27.			X[2]	X[2]	X				X	X			X	X	

1/ Crossings only
2/ Would not allow swimming pool
3/ Trees under 25 ft.
4/ Each "would allow" case would be considered individually
5/ Height Limit

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Cleveland Electric Illuminating Company			Commonwealth Edison Company[5]			Consolidated Edison Company			Consumers Power Company			Dayton Power and Light Company		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.	X	X					X			X	X			X	
2.	X	X[1]		X			X				X			X	
3.	X	X						X		X	X			X	
4.	X	X		X			X				X			X	
5.		X	X[2]						X			X			X
6.	X	X	X[3]	X[1]				X				X			X
7.	X	X						X			X				X
8.	X	X					X			X	X		X		
9.	X	X		X			X			X	X		X		
10.		X	X[2]				X				X		X		
11.			X						X		X				X
12.	X	X[4]		X[6,7]			X				X				X
13.			X						X			X			X
14.			X						X			X			X
15.	X	X		X			X			X	X		X		
16.	X	X		X			X			X	X			X	
17.	X	X[1]		X				X			X[10]			X	
18.	X	X[1]		X			X				X[10]			X	
19.	X	X[1]					X			X	X[10]			X	
20.	X	X		X			X			X	X			X	
21.	X	X		X			X			X	X		X		
22.	X	X		X			X			X	X			X	
23.			X						X			X			X
24.	X	X		X					X		X			X	
25.	X	X		X			X[9]			X	X[9]			X	
26.	X	X							X		11/			X	
27.	X	X		X[8]			X			X					

1/ Height Limit
2/ Structures
3/ Backstops, goal posts and other similar structures
4/ Height restrictions and prohibits the storage of material within a certain number of feet of a tower or pole
5/ We have not filled in the "Would Not Allow" column. Our policy is to embark with extreme caution on broadened uses of right of way and we would not expect, for example, ever to allow an orchard. On the other hand, we review each new application as it comes up on its merits.
6/ Limited Use

Footnotes Continued.

7/ Equipment cannot be flammable or exceed a certain height.
8/ Lawn and garden uses only
9/ Crossings only
10/ Controlled height - retain right to remove anything growing taller
11/ Does not come up

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Detroit Edison Company			Florida Power and Light Company[3]			Georgia Power Company			Gulf Power Company			Gulf States Utilities Company		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.	X	X			X			X		X	X			X	
2.	X	X			X			X		X	X			X	
3.	X	X			X			X		X	X			X	
4.	X	X			X			X		X	X			X	
5.						X			X			X[12]		X	
6.	X	X				X			X			X			X
7.	X	X		X					X		X[13]				X
8.	X	X			X[4]			X			X		X		
9.	X	X		X			X					X	X		
10.	X	X			X				X	X[13]			X		
11.			X			X			X		X[14]				X
12.			X[1]	X[5]					X			X[12]			X
13.			X			X			X			X			X
14.			X			X			X			X			X
15.		X		X			X			X	X		X		
16.		X		X			X			X	X		X		
17.		X		X[6]			X[11]					X		X	
18.		X		X[6]			X			X	X			X	
19.		X		X[6]			X					X			X
20.	X	X		X[7]			X[11]				X[15]	16/		X	
21.	X	X		X			X			X	X		X		
22.				X[8]			X			X	X[13]		X		
23.			X			X			X			X			X
24.	X	X			X[9]		X[11]					X	X		
25.					X[9]		X[11]					X	X		
26.					X[9]		X[11]					X			X
27.	X	X[2]		X[10]			X				X[17]			X[18]	

1/ Non combustible

2/ Swimming pools are discouraged within easement and not permitted on fee owned corridors.

3/ Items 1 through 4 and 7 through 10 may be authorized after careful review of each case and as consent or permission is granted, such would be done by special use license providing certain protective measures to insure that none of these facilities would be incompatible with the company's use of its right of way, and to protect the company and the user(s) against any exposure to personal injury or property damage.

4/ Horseback riding and snowmobile trails are excepted.

Footnotes Continued.

5/ Limited to storage of non-combustible and non-flammable materials and not in excess of 15 feet above existing grade level.
6/ Trees must be limited to a height not exceeding 15 feet above existing grade level.
7/ Generally limited to crossing the right of way. Type of construction and space considerations usually prevent parallel and longitudinal encroachments.
8/ Allowable when deemed safe and practical to do so. Effect on ingress and egress and type of construction are prime considerations.
9/ Crossing of streets and highways, drainage canals, sewers, pipe lines, railways, etc. are normally approved subject to specific conditions applicable for each crossing. Parallel and longitudinal crossings are difficult to handle because of space considerations.
10/ Residential use as additional yard space is generally approved provided these uses are not in conflict with company's use of the right of way, including ingress and egress, and provided it is not objectionable to the neighbors.

Swimming pools are not allowed. The other residential uses are permitted if not open to public.
11/ Under certain circumstances where company indemnified.
12/ Generally No
13/ With Reservations
14/ Private, without auxiliary buildings
15/ For crossings
16/ Not lateral occupation
17/ Without permanent structures
18/ No swimming pools

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Hartford Electric Light Company			Hawaiian Electric Company			Kentucky Utilities Company			Long Island Lighting Company			Los Angeles Department of Water and Power		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.		X		X			X			X				X	
2.		X			X			X				X			X
3.		X			X		X			X				X	
4.		X			X		X			X					X
5.			X			X		X[7]				X			X
6.	X[1]	X[2]			X			X[7]				X			X
7.		X[2]			X			X[7]				X			X
8.		X			X			X		X	X[8]				X
9.	X	X			X		X					X		X	
10.		X			X			X				X		X	
11.	X[3]				X			X[7]				X			X
12.			X			X		X[7]				X			X
13.			X			X			X			X			X
14.			X			X			X			X			X
15.	X	X		X			X			X	X			X[9]	
16.	X	X		X			X			X	X			X[9]	
17.			X			X	X			X	X				X
18.		X				X	X			X	X			X[9]	
19.			X			X	X			X	X				X
20.	X[4]			X			X			X	X			X[10]	
21.		X		X			X			X	X			X	
22.			X		X		X			X	X				X
23.			X			X			X			X			X
24.	X[5]			X			X					X		X[10]	
25.			X	X			X			X	X			X[10]	
26.			X	X			X					X		X[10]	
27.	X[6]	X		X			X			X	X				X

1/ Now have limited number

2/ Would allow if no interference with our structures. We would want to control the height and location of any fencing.

3/ We would want to control location of pool and the height and location of any fencing.

4/ We have no objections to crossings of our rights of way by roads or other utility lines (prefer crossings to be as nearly perpendicular as possible). We prefer not to have longitudinal occupancy by other utility lines. Where it is permitted we must control the location of other lines on the right of way, the height of overhead lines (since by safety standards there must

Footnotes Continued.

be a minimum clearance from our lines) and the depth of any buried pipes or cables.

5/ Now have many crossings, limited longitudinal occupancy

6/ We would want to control location of swimming pools and the height and location of any fencing.

7/ On limited basis

8/ Hiking and horseback riding trails

9/ Conditional

10/ Crossings Only

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Louisiana Power and Light Company			Mississippi Power and Light Company			New England Power Company			New Orleans Public Service, Incorporated			Niagara Mohawk Power Corporation		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.	1/	X			X		X				X				
2.	1/	X[2]				X	X				X				
3.	1/	X[2]			X						X				
4.			X			X					X				
5.			X			X					X				
6.	1/	X[3]				X						X			X
7.	1/	X[3]				X					X				X
8.	1/	X			X						X			X	
9.		X		X							X			X	
10.	1/	X			X							X			X
11.			X			X					X				X
12.	1/	X				X					X[8]				X
13.			X			X						X			X
14.			X			X						X			X
15.	1/	X[2]		X			X				X		X	X	
16.	1/	X[2]			X		X				X			X	
17.	1/	X[4]				X	X					X		X	
18.	1/	X[2]			X						X			X	
19.		X[4]				X	X					X		X	
20.		X		X			X			X	X		X	X	
21.		X		X			X			X	X		X	X	
22.		X		X				X		X	X		X	X	
23.			X[5]			X						X			X
24.		X[6]		X			X			X	X		X	X[9]	
25.		X[6]		X			X			X	X		X	X[10]	
26.		X[6]									X				
27.	1/	X[7]				X					X		X		

1/ Our rights of way are acquired for power line purposes. The land owners are not allowed to place structures and buildings on the rights of way, or conduct any activity inconsistent with power line purposes. The land owners are then free to use the property within the right of way except as herein stated.

2/ No buildings

3/ Portion of Right of Way

4/ Control Heights

5/ Would allow parking

6/ By Agreement

Footnotes Continued.

7/ Patio-slab -- no buildings, barbecue pits -- no buildings, no swimming pools, picnic areas -- no buildings

8/ Limited

9/ The Company's rights are merely by virtue of license. The railroad generally owns the fee title.

10/ Highway occupations are generally by virtue of franchise rights. The company will permit traverse crossings by highways when latter are established subsequent to our construction providing there is no change of grade.

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Northern States Power Company			Ohio Power Company			Pacific Gas and Electric Company[2]			Pennsylvania Power and Light Company			Philadelphia Electric Company		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.	X			X	X			X			X		X		
2.		X		X	X			X			X		X[8]		
3.	X			X	X			X		X			X		
4.	X			X	X		X			X			X		
5.		X		X	X			X				X			9/
6.	X			X	X				X			X	X		
7.	X			X	X		X	X				X	10/		
8.	X			X	X			X			X		X		
9.	X			X	X		X					X[4]	X		
10.		X				X		X			X		X		
11.	X					X			X			X	10/		
12.	X			X	X		X	X			X[5]		X		
13.	X[1]					X			X			X		10/	
14.		X				X			X			X			9/
15.	X			X	X		X	X		X			X		
16.	X			X	X		X	X		X			X		
17.	X					X	X	X		X			X		
18.	X			X	X		X	X			X		X		
19.	X					X	X	X		X			X		
20.	X			X	X		X	X		X			X		
21.	X			X	X		X	X		X			X		
22.	X			X	X		X	X		X[6]			10/		
23.			X			X			X			X		10/	
24.	X			X	X		X	X					X		
25.	X			X	X		X	X						X	
26.		X		X	X		X	X		X			X		
27.	X			X	X		X	X[3]				X[7]	X		

1/ We presently have only one situation where mobile homes are placed on the right of way and we do not consider it to be a desirable arrangement. It would in fact not be allowed if the line voltage were higher than 115 kv.

2/ It should be born in mind that any of the "allowed" joint uses listed above, other than those which are both non-interfering and not prohibited in express terms by the easement deed, may be subject to special conditions or prohibited altogether. For instance, our easement deed generally grants us the right to cut down and remove all trees or brush from the right of way. Where an electric transmission line is involved, our consent to common

Footnotes Continued.

use agreements stipulate that trees planted on the right of way shall be limited to 15 feet in height.

Similarly, the deeds prohibit the erection or construction of any building or other structure on the right of way. All requests to place above ground structures on the right of way are carefully reviewed, buildings or portions thereof not being allowed except under very special circumstances. On the other hand, subject to such conditions as are appropriate to the case, fences, patios, barbecue pits and recreation facilities (not including swimming pools) are allowed where operating conditions permit.

3/ No swimming pools
4/ We do have one
5/ No inflammables or explosives
6/ Preferably no
7/ Such uses are discouraged. Absolutely no swimming pools.
8/ Except fire places
9/ Except as an extension of an adjacent development
10/ Subject to electrical and grounding requirements

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Public Service Company of Colorado			Public Service Company of New Hampshire			Rochester Gas and Electric Corporation[5]			San Diego Gas and Electric Company[6]			Southern California Edison Company		
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA
1.		X		X							X		X		
2.	X				X						X			X	
3.	X				X						X			X	
4.	X		X		X					X[7]			X		
5.					X						X				X
6.	X			X								X	X		
7.	X			X								X	X		
8.		X		X							X		X		
9.	X			X			X			X			X		
10.		X		X								X		X	
11.			X	X								X			X
12.			X[1]	X						X			X[10]		
13.			X									X			X
14.			X									X			X
15.	X			X			X			X			X		
16.	X			X			X			X			X[11]		
17.		X		X			X			X			X[11]		
18.	X			X			X			X			X		
19.		X					X			X			X		
20.	X			X			X			X			X[12]		
21.	X			X			X			X			X		
22.	X[2]			X						X					X[13]
23.			X[3]									X			X
24.		X		X			X			X[8]			X[12]		
25.	X			X						X[8]			X[12]		
26.		X									X[9]		X[12]		
27.		X[4]		X								X			X

1/ Also no storage of material or underground storage of fuels
2/ Also transient parking in commercial and industrial areas
3/ Do allow parking at places such as schools, playgrounds, churches, etc.
4/ For yard use, open patios and picnic areas only
5/ Each "would allow" and "would not allow" case would be considered individually and the decision based on the conditions and proposed usage in the specific situation.
6/ All uses permitted within transmission rights of way are considered on an individual basis regardless of type of use.

Footnotes Continued.

7/ Our rights of way are patrolled but it would be impossible to limit all unauthorized use of this type.
8/ Crossing only
9/ Public transit inferred
10/ Storage of equipment or materials which are non-flammable only
11/ Any trees in containers or in the ground must not exceed a height of 15 feet above ground.
12/ Right angle crossings subject to specific conditions for each such crossing. Parallel or longitudinal encroachments are denied unless they are beneficial to the company.
13/ Authorized with special approval on rights of way utilized for 66 kv or lesser transmission lines

ANSWERS TO "CHECK REPRESENTATIVE JOINT USE" QUESTION

Item No.	Tennessee Valley Authority			Toledo Edison Company			Virginia Electric and Power Company								
	NH	WA	WNA	NH	WA	WNA	NH	WA	WNA						
1.	X	X		X			X								
2.	X	X		X			X								
3.	X	X		X			X								
4.	X	X		X			X								
5.	X	X			X			X[7]							
6.	X	X			X			X[7]							
7.	X	X			X			X[7]							
8.	X	X		X			X								
9.	X	X		X			X								
10.	X	X				X		X							
11.			X			X			X						
12.	X	X			X[2]			X[7]							
13.			X			X			X						
14.	X	X				X			X						
15.	X	X		X			X								
16.	X	X		X			X								
17.	X[1]	X		X[3]			X[3]								
18.	X	X			X[4]		X								
19.	X[1]	X		X			X[3]								
20.	X	X		X			X								
21.	X	X		X			X								
22.	X	X		X			X								
23.	X	X				X			X						
24.			X	X			X								
25.	X	X		X[5]			X[8]								
26.	X	X						X							
27.	X			X[6]			X								

1/ When planted species are of low growing variety
2/ Some reservation
3/ Limited Height
4/ No green houses
5/ No longitudinal occupancy
6/ No buildings
7/ Under controlled conditions
8/ Crossings only

A P P E N D I X D

EXAMPLE OF A STANDARD FORM USED TO ACQUIRE AN EASEMENT INTEREST IN LAND FOR RIGHT OF WAY AND RESERVING CERTAIN USES OF THE LAND TO THE OWNER

KNOW ALL MEN BY THESE PRESENTS:

THAT _____ hereinafter called Grantor, for and in consideration of _____ Dollars in hand paid by GULF STATES UTILITIES COMPANY, the receipt of which is hereby acknowledged, has granted, and by these presents does grant unto said GULF STATES UTILITIES COMPANY, hereinafter called Grantee, a corporation duly incorporated and existing under the laws of the State of Texas, the RIGHT, PRIVILEGE AND EASEMENT to enter upon and to construct, maintain, operate, inspect, patrol, replace, repair and remove

composed of wood, metal or other type or types of material with lines of wires, crossarms, guy wires, stubs, foundations, anchors and other usual fixtures for the transmission of electricity and communications, said facilities to be erected simultaneously or at different future times, with the right to replace structures or fixtures composed of one type of material or materials with structures or fixtures of any other type of material or materials at any time and from time to time without further payment, upon, over and across that certain tract or parcel of land owned by Grantor, situated in the _____ Survey, in _____ County, Texas, fully described in Vol. _____ Page _____ _____, Deed Records of _____ County, Texas to which reference is hereby made for description, said facilities to be located within the easement strip except that at angle points, if any, Grantee may place guy wires, stubs and anchors outside said easement strip in sufficient number so as to adequately brace its structures at any place where said easement strip makes an angle, which easement strip and continuations or projections thereof, insofar as same may be embraced within said tract, shall extend _____ fee on each side of the following described center line:

(Legal Description)

GRANTOR grants unto Grantee the rights at any time, and from time to time (a) to trim, cut or remove all trees, underbrush and other obstructions located upon said easement strip, without further payment, and (b) to trim, cut or remove from the land outside of said easement strip any and all trees which in falling could come within ten feet of the electric lines of Grantee, upon payment of market value of such trees.

GRANTOR RETAINS the right to use for Grantor's own purposes the

land covered by said easement as long as such use does not interfere with the easement and rights herein granted. However, Grantor shall not erect, locate or permit the erection or location of any structure or object of any type whatever within the easement strip described above, but Grantor may fence any or all of said property. Grantee shall have ingress and egress at any time to, from and along the land covered by this easement.

GRANTEE SHALL pay Grantor for damages to Grantor's buildings, other structures and trees where located outside said easement strip; and to Grantor's growing annual crops, roads, bridges and fences caused by the construction, operation and maintenance of said electric lines.

TO HAVE and to hold the above granted rights, easement and right-of-way unto the said Grantee, its successors and assigns, until the use of said easement by Grantee is commenced, and so long thereafter as the same shall be useful for the above named purposes.

GRANTOR hereby covenants with Grantee, that Grantor has title to said land, and has the right to grant the privileges herein contained.

ALL THE AGREEMENTS and stipulations herein contained, and all of the obligations herein assumed, shall inure to the benefit of and be binding upon the heirs, successors and assigns of the respective parties hereto. Whenever the word "Grantor" is used herein it shall be construed to include "Grantors."

WITNESS the signature of Grantor this _____ day of _____ _____ A. D., 19 __.

(Signatures)

EXAMPLE OF A BRIEF STANDARD FORM USED

TO LEASE RIGHT OF WAY FOR JOINT USE

THIS LEASE made this _____ day of _____, 19__ between _____ Lessor and _____ of County of _____ and State of _____, Lessee.

WITNESSETH: That said Lessor in consideration of the covenants hereinafter contained to be performed by said Lessee, hereby leases to said Lessee the following described premises situated in the _____ _____ of _____ County of _____, State of _____, being a part of Section No. _____, Township No. _____, Range No. _____, being more fully described as follows:

(Legal Description)

TO HAVE AND TO HOLD the same, with appurtenances, unto said Lessee from the _____ day of _____, 19__, for and during the full term of _____ next ensuing, and fully to be completed and ended on the _____ day of _____ 19__.

Said Lessee does hereby covenant and agree with said Lessor that said premises shall be used solely for _____ purposes; that the Lessee shall keep said premises in a clean and workable condition and shall keep in good repair any fences and other improvements thereon; that the Lessee shall use the utmost care and precaution for the protection and preservation of the Lessor's concrete monuments as now located on said premises; that the Lessee shall not assign this lease or sub-let said premises without written consent of the Lessor; that the Lessee will not use or permit said premises to be used in an unlawful way or for any unlawful purpose but will deliver up said premises at the termination of this lease in as good order, condition and repair as the same are now or may be put, reasonable use and ordinary wear and tear and damage by fire and other unavoidable casualty expected; that a violation of any of the clauses of the lease herein shall render this lease null and void, at the option of the Lessor.

The Lessor hereby excepts and reserves the right unto itself, its employees or agents to enter upon said premises at any time and to erect thereon and operate, maintain, inspect, repair or remove a line of towers, poles, wires, fixtures and appurtenances necessary for the purpose of transmitting electric or other power in, on, along, over, through or across the above described premises, or doing anything necessary or useful in the conduct of Lessor's business.

The Lessee hereby releases the Lessor from any and all liability

for injury or loss of life of any person or persons using said premises under this lease, and also from any damage to the property of any persons so using said premises, and hereby agrees to indemnify and save harmless the Lessor from any and all such injury or damages.

Either Lessor or Lessee shall have the privilege of cancelling this lease upon giving thirty days written notice. The words "Lessor" and "Lessee" wherever used in this lease shall include the heirs, executors, administrators, successors and assigns of the Lessor and Lessee respectively.

IN WITNESS WHEREOF, the said Lessor and Lessee have hereunto set their hands on the day and year first above written.

(Signatures)

EXAMPLE IN LETTER FORM OF A CONSENT TO COMMON USE

AGREEMENT FOR GARDENING, LANDSCAPING, AND FENCE USE

Dear Mr. and Mrs. _____:

Pacific Gas and Electric Company, hereinafter called Pacific, hereby consents to your use in common with Pacific of that certain _____-foot by _____-foot parcel of land which is shown in red on the print _____ _____ attached hereto and hereby made a part hereof, said parcel of land being a portion of the area within Pacific's hereinafter described right of way for its Metcalf-El Patio Electric Transmission Line in the City of San Jose, County of Santa Clara, State of California.

Said right of way was acquired by Pacific from _____ by deed dated _____ and recorded in the office of the Recorder of said County of Santa Clara in Book _____ of Official Records at page _____.

Your use of said parcel of land pursuant to this consent shall be limited to (1) the installation and maintenance of a redwood fence, 6 feet in height, along the _____, _____ and _____ boundary lines of said parcel of land, and (2) gardening and landscaping within said parcel of land.

This consent is given subject to the following terms and conditions:

1. You shall not make any excavation within said parcel of land, nor shall you erect or install any buildings or other permanent structures thereon.

2. You shall not plant any trees or shrubs which normally attain a height exceeding 15 feet when fully grown.

3. The provisions hereof shall inure to the benefit of and bind the respective successors and assigns of the parties hereto.

In addition, this consent is given subject to the terms and conditions on the reverse of page one hereof.

If you accept the terms and conditions of this consent, please sign the duplicate of this letter and return it to this office.

(Signatures)

TERMS AND CONDITIONS
(reverse side of page one)

1. You shall obtain all necessary rights from the owners of the lands crossed by Pacific's right of way in the event that you do not own said lands and rights.

2. You shall use said area within Pacific's right of way in such a manner as will not interfere with Pacific's use thereof or endanger Pacific's facilities installed thereon.

3. The consent hereby given is subject to all the provisions of General Order No. 69, 95 (electric) and 112A (gas), as applicable, of the Public Utilities Commission of the State of California, and to all other applicable provisions of the laws and regulations of the State of California and all other governmental agencies.

4. You acknowledge Pacific's title in and to said right of way and the priority of Pacific's title therein and agree never to resist or assail the same.

5. Your use of said area within said right of way shall be at your sole risk and expense.

6. No tools, machinery, equipment, or materials shall be moved or operating within six feet of Pacific's high voltage overhead conductors. Violation thereof is made a misdemeanor by Section 385 of the Penal Code of the State of California.

7. Notwithstanding anything contained herein you agree to reimburse Pacific for any damage to Pacific's facilities resulting from your use of said area within said right of way.

EXAMPLE OF AN AGREEMENT IN LEASE

FORM FOR OFF-STREET PARKING USE

THIS INDENTURE, made and entered into this day of _____ by and between COMMONWEALTH EDISON COMPANY, an Illinois Corporation (hereinafter referred to as "Lessor") and _____, an Illinois Corporation (hereinafter referred to as "Lessee");

W I T N E S S E T H:

Lessor, for and in consideration of the rent hereinafter reserved and of the covenants, conditions and agreements of Lessee hereinafter contained has demised and leased and by these presents does demise and lease unto Lessee for a driveway and for the parking of employees' and customers' passenger automobiles adjacent to Lessee's building, and for no other purposes whatsoever, the property shown outlined in red on the plat attached hereto marked Exhibit "A" dated _____ and made a part hereof (hereinafter referred to as the "demised premises");

TO HAVE AND TO HOLD the demised premises for and during the term of five years commencing on the _____ day of _____ and expiring on the _____ day of 1972 unless sooner terminated as hereinafter provided.

FIRST: Lessee hereby agrees to pay as rent for the demised premises the sum of _____ per month, the first installment to be paid on the _____ day of _____ and the remaining installments to be paid one each on the first day of each and every succeeding month thereafter during the term hereof. Each and all of said installments of rent shall be paid to Lessor at 72 West Adams Street, Chicago, Illinois, 60690, or at such other place as Lessor may from time-to-time designate in writing.

SECOND: Lessee hereby agrees, at its sole cost and expense, to clean, grade, level and drain the demised premises, but in so doing shall not alter or exceed the elevation of the present ground grade level, and shall provide neat appearing, well-drained, firm and solid blacktop or dustfree surface materials other than concrete, which materials are to be approved by Lessor, on all areas to be used for the driving or parking of vehicles. Lessee further agrees that it will not create any surface water drainage problems for owners of the adjoining property and will, at its sole cost and expense, prevent or correct any such problems it may create as the result of its activities on the demised premises.

THIRD: Lessee hereby agrees, at its sole cost and expense, to

install State of Illinois Approved Steel Barricades to protect Lessor's present or any future equipment located or to be located on the demised premises, and Lessee shall have the right, at its sole cost and expense, to install any and all wheel stops and lighting standards which may be required on the demised premises, and agrees to maintain said barricades, wheel stops and lighting standards in a first-class condition and neat appearance at all times and to the satisfaction of Lessor's representative. Lessee further agrees to submit to Lessor, for its approval, any and all plans and specifications for barricades, wheel stops and lighting standards which may be required on the demised premises and such installations shall not be made without the consent and prior written approval of Lessor.

FOURTH: Lessee agrees to immediately remove any and all passenger autmobiles from the demised premises whenever requested by the Lessor, which in its sole judgment may be necessary in connection with construction, installation, operation, maintenance, repairing, replacing or patrolling of Lessor's existing or future underground or overhead equipment on the demised premises. In the event Lessee can not, is unable or unwilling to remove the aforesaid passenger automobiles, Lessee hereby gives Lessor full authority without any liability on Lessor's behalf to have the right to cause them to be removed and Lessee will promptly reimburse Lessor for all expense of any kind whatsoever upon presentation of a bill therefor and agrees to save harmless and indemnify Lessor from all liability of any kind whatsoever that Lessor may have incurred by such removal.

FIFTH: Lessee hereby agrees that Lessor shall have the right at any time to remove any surface material installed by Lessee as it may have need to in constructing, installing, operating, maintaining, repairing, replacing or patrolling its facilities and equipment and other than leaving a solid and firm backfill where such removal has been made shall not be liable to Lessee to restore said surface.

SIXTH: Lessee covenants and agrees to save harmless and indemnify Lessor against all loss, liability, damage and expense, including attorney's fees, incurred by Lessor on account of any injury to or death of any person or persons whomsoever or on account of damage to property sustained by any person or persons whomsoever caused by, connected with or arising out of, directly or indirectly, wholly or in part, any use or operation of the demised premises resulting in any manner from the privileges herein given, the breach by Lessee of the covenants and agreements herein, the negligence of Lessee, or any unlawful use of the demised premises.

In addition to and not in limitation of the foregoing, Lessee covenants and agrees, at its sole cost and expense, to furnish and carry in Lessor's name at all times during the term of this lease, an Owners, Landlords and Tenants Liability Insurance Policy in the amounts of $500,000.00 and $1,000,000.00 for injury or death to any person or persons, and _____ for damage to property covering the ownership and

use of the demised premises. Such insurance shall be modifiable or cancellable only on written notice delivered by registered mail to Lessor not less than 10 days in advance of modification or cancellation. Said policy shall be issued by a good and responsible insurance company and in a form acceptable to Lessor.

SEVENTH: Lessee hereby agrees that it will not place or maintain or allow to be placed or maintained by any person or persons, any signs or advertising billboards upon the demised premises except "Private Parking" or such small, inoffensive signs as may be necessary to identify Lessee's occupancy of the demised premises.

EIGHTH: Lessee agrees upon termination of this lease by forfeiture, lapse of time or otherwise, if so requested in writing by Lessor and at least 30 days prior to the termination to remove any and all barricades, wheel stops and lighting standards installed on the demised premises, including any surfacing material and to restore the demised premises to a condition satisfactory to Lessor's representative. In the event Lessee fails to remove any and all of its barricades, wheel stops, lighting standards and surfacing material and so restore the demised premises, Lessor shall have the right to remove such barricades, wheel stops, lighting standards and surfacing material and Lessee hereby agrees to reimburse Lessor for any and all expense incurred in connection therewith upon presentation of a bill therefor.

NINTH: Lessee shall not permit any unlawful or immoral act or practice on the demised premises or any other act or practice which may injure the reputation of the demised premises.

TENTH: Lessee will not suffer or permit any mechanic's lien or other such lien to attach to the demised premises by reason of any improvements upon or alterations to the demised premises or work done thereon by or upon the order of Lessee and will save Lessor harmless from any such lien or claim therefor and from any and all cost or expense incurred in connection with any such lien or claim.

ELEVENTH: Lessee hereby agrees in addition to the monthly rental payments provided herein, to promptly reimburse Lessor for any and all of the real estate taxes or any other local or federal taxes that may be assessed on the demised premises for any and all improvements made by Lessee on the demised premises during the term hereof within a 30-day period of presentation to Lessee of Lessor's statement.

TWELFTH: Lessee has examined the demised premises and knows the condition thereof and no representations as to the condition and repair thereof and no agreements to make any alterations, repairs or improvements in or about the demised premises have been made by Lessor. Lessor shall not be liable for any damages arising from acts or neglect of Lessee or the occupants of or anyone using the demised premises or of the public.

THIRTEENTH: Lessee hereby agrees to keep and maintain the demised premises in a clean, neat, orderly and sightly condition and to Lessor's satisfaction at all times during the term of this lease.

FOURTEENTH: Lessee hereby agrees that no part of the demised premises shall be utilized by the Lessee to meet the zoning, parking or density requirements of the _____ and that the Lessee shall at all times maintain sufficient open space on its legally-owned property independent of the demised premises to satisfy all _____ zoning, parking and density requirements.

FIFTEENTH: Lessee covenants and agrees that no alcoholic liquors or beverages are to be permitted to be used or consumed on the demised premises and Lessee hereby covenants and agrees it will save and keep harmless Lessor and the demised premises and each and every part thereof from all damages, claims, fines, penalties, costs and expenses whatsoever which may result to Lessor or to the demised premises under the provisions of that certain statute of the State of Illinois, entitled "An Act Relating to Alcoholic Liquors," approved and effective January 31, 1934, as amended.

SIXTEENTH: Lessee hereby agrees that in the event Lessee or anyone using the demised premises, damages any pole, tower, fencing or any other facilities or equipment or Lessor and/or causes electrical service interruptions to Lessor's customers at any time during the term of this lease, Lessee will promptly reimburse Lessor for any and all expenses incurred for the repairing of such damage and/or save harmless and indemnify Lessor against all loss, liability, damage and expense, including attorney's fees, resulting in any manner from the electric service interruptions.

SEVENTEENTH: Due to the presence of Lessor's electrical facilities located on the demised premises, Lessee hereby agrees that no vehicles will be parked, used, driven or stored on the demised premises having a height in excess of 15 feet from original ground grade level. Lessee also agrees to prohibit any activities on the demised premises such as flying kites or model airplanes or the transportation or movement of anything having a height more than 15 feet from original ground grade level.

EIGHTEENTH: This lease may not be assigned by Lessee nor shall there by any subletting at any time during the term hereof.

NINETEENTH: In the event Lessee is adjudged a bankrupt under the laws of the United States of America, this lease shall automatically terminate as of the date of such adjudication.

TWENTIETH: If default be made in the payment of the rent herein reserved or any part thereof, or in any of the covenants and agreements herein contained to be kept by Lessee or if Lessee shall violate or breach any of the terms, conditions or provisions of this lease or if

Lessee shall vacate or abandon the demised premises during the life of this lease, it shall be lawful for Lessor at any time at its election, without notice or demand, to declare said term ended and to re-enter the demised premises either with or without process of law and to expel, remove and put out Lessee or any person or persons occupying the demised premises using such force as may be necessary so to do and to repossess and enjoy the demised premises again as before this demise without prejudice to any remedies which might otherwise be used for arrears of rent or preceding breach of covenants; Lessee hereby expressly waiving all right to any notice or demand under any statute relating to forcible entry and detainer. The decision of Lessor shall be final and binding upon Lessee concerning any breach or default in the covenants and agreements contained in this lease.

TWENTY-FIRST: This lease may be terminated by either party hereto by giving 90 days' prior written notice to the other party of such termination.

TWENTY-SECOND: It is understood and agreed that Lessor has made no representations that the demised premises are properly zoned for the proposed parking use by Lessee, and it is expressly understood that Lessee hereby assumes any and all obligations and responsibilities with respect to the _____ zoning laws and ordinances and other regulatory bodies which may have jurisdiction thereover in this area and in connection therewith Lessee shall obtain written approval from the _____ for Lessee's proposed use of the demised premises and shall furnish a copy of such written approval to Lessor prior to Lessee's occupancy of the demised premises. This lease is not conditioned on Lessee obtaining necessary zoning or use permits or authority for the proposed parking use by Lessee. Any permits required hereunder, including driveway permits and others, shall be acquired by Lessee, at its sole cost and expense. Lessee hereby understands and agrees that Lessor does not grant Lessee the right or authority by the terms of this lease at any time to have the demised premises re-zoned for the use hereinbefore stated.

TWENTY-THIRD: This lease shall not in any manner or to any extent, limit or restrict the right of Lessor to use or dispose of the demised premises as Lessor in its discretion may desire, and particularly, but not in limitation of the foregoing, Lessor, at all times, shall have free and unrestricted access for its employees, agents, representatives, assigns or grantees to come upon the demised premises either by vehicle or on foot, for the purpose of constructing, installing, operating, maintaining, repairing, replacing or patrolling any or all of its facilities and equipment located thereon or any and all of its additional and future facilities and equipment which will be located thereon. Lessor shall not be liable to any extent for any damages to Lessee's property or any improvements which Lessee may make or install on the demised premises that may be occasioned as a result of entry by Lessor's employees, agents, representatives, assigns or grantees or resulting from the construction, installation, operation, maintenance, repairing,

replacing or patrolling of any of Lessor's facilities and equipment located or to be located on the demised premises.

TWENTY-FOURTH: The rights of the Lessor to utilize the demised premises in its utility business will, at all times be and remain paramount to the rights herein granted to Lessee by Lessor and nothing stated herein is to be construed as restricting Lessor from granting rights to other parties or persons in, upon or under the demised premises. Without limiting the generality of the foregoing, the parties specifically refer to sewers, water pipes and mains, drainage tiles and pipes, gas mains and pipelines and other allied uses.

TWENTY-FIFTH: All notices to Lessor shall be sent by registered mail addressed to Commonwealth Edison Company, Real Estate Department, 72 West Adams Street, Chicago, Illinois, 60690, or at such other place as Lessor may from time-to-time designate in writing. All notices to Lessee shall be sent by registered mail address to Lessee at _____ _____ or at such other place as Lessee may from time-to-time designate in writing.

TWENTY-SIXTH: This lease shall be binding upon and enure to the benefit of the parties hereto, and except as otherwise provided in Paragraph Eighteenth hereof, their respective successors and assigns.

IN WITNESS WHEREOF, the parties hereto have hereunto set their hands and seals all as of the day and year first above written.

(Signatures)

EXAMPLE OF A GRANT OF RIGHT OF WAY AND EASEMENT AND

CONSENT OF FEE OWNER FORM FOR ANOTHER UTILITY USE

THIS INSTRUMENT WITNESSETH that NIAGARA MOHAWK POWER CORPORATION, a domestic corporation, having its principal office at 300 Erie Boulevard West, Syracuse, New York, GRANTOR and Party of the First Part, being the owner of or having an interest in land situated in the Town of Dewitt, County of Onondaga, State of New York, and being more fully described in a deed from _____, et al. to _____ dated March 13, 1956 and recorded in Onondaga County Clerk's Office September 26, 1956 in Book of Deeds 1828 at Page 1, for and in consideration of the sum of One Dollar ($1.00) and other good and valuable considerations, the receipt of which is hereby acknowledged, hereby grants and releases unto COUNTY OF ONONDAGA, a municipal corporation of the State of New York, acting for and in behalf of ONONDAGA COUNTY WATER DISTRICT, having its principal office in the County Office Building, 600 South State Street, Syracuse, New York, 13202, GRANTEE and Party of the Second Part, its successors and assigns, the right, privilege and authority to construct, maintain, inspect, operate, protect, replace, repair, change the size of and remove one or more pipelines and other fixtures or appurtenances used or associated therewith for the transmission and/or distribution of water upon, across, over and under the following described portion of the land and property conveyed by the aforementioned deed:

(Legal Description)

This conveyance is made and accepted subject to the following terms and conditions:

1. GRANTEE accepts this conveyance with the knowledge that, in the future, GRANTOR may utilize said premises for the purpose of constructing, reconstructing and repairing electric or gas transmission lines and appurtenant facilities. Therefore, the exercise of this grant shall be conditioned upon GRANTEE giving GRANTOR at least ten (10) days prior written notice of all plans and specifications for any and all such construction, reconstruction, repair or other work to be performed by GRANTEE over, under or across the subject premises and no such proposed work shall be commenced without the written approval of GRANTOR first obtained.

2. GRANTEE shall employ no cranes, hoists or other mechanical devices and equipment likely to come into contact with existing or future electric, gas or water lines upon the subject premises without the prior written approval of the GRANTOR, which approval shall not be unreasonably withheld or denied.

3. Both parties hereto agree to restore the said property as nearly as possible and practical to its condition prior to any and all construction operations, and to maintain the existing surface drainage pattern.

4. The GRANTEE and the GRANTOR each shall assume all its own risks of loss, damage or injury to property, including improvements on the right of way, and to persons, including personal injuries resulting in death, from time to time in or on the subject premises arising out of or in any way connected with the construction, operation, maintenance, repair, relocation and/or removal of such electric, gas and water transmission lines, and hereby agree to protect, defend, indemnify and save harmless the other party hereto, its officers, agents and employees from and against all such loss, damage or injury arising out of the construction, operation and removal of the respective facilities of the parties hereto, whether resulting to the other party hereto, its officers, agents or employees or to any other person or persons and from all claims arising from such loss, damage or injury and from all costs and expenses connected therewith.

5. Prior to the commencement of any construction, reconstruction or other work in, over or under the subject premises, GRANTEE shall furnish to GRANTOR, at its own cost and expense, Certificates of Insurance satisfactory to the other party, and not subject to cancellation or material change without ten (10) days written notice to the other party that a policy of insurance has been issued naming the GRANTOR as an insured, together with GRANTEE or any contractor hired by said GRANTEE to actually perform the work, which policy shall contain the following coverage and minimum limits:

> Public Liability Insurance Policy, including completed operations and no exclusion for damage to underground property with limits of $200,000/500,000 on bodily injuries (including injuries resulting in death) and $200,000/300,000 for property damage. Such policy shall include a cross-liability endorsement insuring each named insured in the same manner as though separate policies had been issued to each of the insureds.

6. This conveyance is made subject to any and all liens, encumbrances, conditions, restrictions and/or reservations subject to or under which the GRANTOR holds said premises or any portion thereof.

7. The GRANTEE assumes all risk of damage to its water line or lines from electrolysis.

8. The covenants and conditions herein shall be binding upon and inure to the benefit of the successors, legal representatives and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have caused their

respective corporate seals to be hereunto affixed and these presents to be signed by their duly authorized officers this 6th day of November, 1964.

(Signatures)

The undersigned, _____, owner of the premises underlying the Easement premises above described, being a portion of lands under Contract of Sale with Niagara Mohawk Power Corporation dated September 23, 1964, hereby joins the foregoing grant of easement as a party grantor to the end that the County of Onondaga may utilize said premises upon the terms and provisions hereinabove set forth.

Dated: November 10, 1964.

(Signature)

EXAMPLE IN LICENSE FORM GRANTING A PARK USE

THIS AGREEMENT, Made and entered into as of the 1st day of March, 1967, by and between SOUTHERN CALIFORNIA EDISON COMPANY, a corporation organized under the laws of the State of California, hereinafter called "Licensor," and the CITY OF LA PALMA, hereinafter called "Licensee";

W I T N E S S E T H:

That the Licensor, for and in consideration of the faithful performance by the Licensee of the terms, covenants and agreements hereinafter set forth to be kept and performed by the Licensee, does hereby give to the Licensee, this license to use that certain real property hereinafter described, for a period of five (5) years, commencing on the 1st day of March, 1967, and ending on the 29th day of February, 1972, unless sooner terminated as herein provided, solely for the purposes hereinafter specified and upon and subject to the reservations, terms, covenants and conditions hereinafter set forth.

The real property hereinabove referred to is located in the County of Orange, State of California, described as follows:

(Legal Description)

1. The Licensee agrees to pay to the Licensor the sum of $100.00 per year rental annually in advance for the real property covered by the within Grant of License. Licensee agrees to pay the first of such annual installments of $100.00 upon the date of execution hereof and to pay further installments of $100.00 each on the first day of March of each and every year that the within license is in existence.

2. The Licensee agrees to use the above-described premises for park purposes only. Licensee further agrees that all facilities planned to be installed on the above-described real property, the location thereof and all plans and specifications relative thereto, shall be subject to the prior written approval of the Licensor. Plans shall be submitted to the Division Superintendent of Licensor's Southern Transmission Division. Details requiring approval shall include, but not be limited to, the grounding of all metal equipment, the elevation of all structures above the ground and the installation of underground pipes, sewer lines and other structures. In addition Licensee shall provide a 12-foot wide open space along Licensor's Barre-Del Amo Transmission Line Right of Way within the licensed area for the purpose of a patrol road for the use of Licensor. The approximate center line of said patrol road shall be 20 feet north from the south line of said transmission line right of way. Should the Licensor determine it to be necessary for the Licensee to relocate or remove any of its facilities

constructed pursuant to the rights herein granted, the Licensee agrees to so relocate or remove at its own expense upon written request by the Licensor.

3. This license is given pursuant to the authority of and upon and subject to the conditions prescribed by General Order No. 69-B of the Public Utilities Commission of the State of California, dated and effective September 10, 1963, which General Order No. 69-B by this reference is hereby incorporated herein and made a part hereof.

4. The Licensor reserves for itself, its successors and assigns, the right to construct, maintain, operate, repair, replace and/or inspect upon, over and in said property transmission lines for electric energy, telephone lines and/or pipelines, together with appurtenant structures and the right to use said property or any portion thereof, for any purpose that said Licensor may desire in connection with its business, together with the right to enter upon said premises or any portion thereof, at all times for any or all of the above-mentioned purposes, all of which rights may be exercised without the payment of any compensation or damages whatsoever for the destruction of any property on the above-described land resulting from the exercise of the said rights or any thereof.

5. Licensee agrees to construct a chain-link fence, grounded with approved grounding rods, around each electric line tower located within the hereinabove described property and to provide suitable access gates and driveways, all in accordance with specifications approved by the Licensor. Licensee agrees to keep all trees on said property trimmed to a maximum height of fifteen (15) feet. All equipment used by Licensee, its agents or contractors, within the licensed premises shall be kept at least 25 feet away from all structures of Licensor and 15 feet away from any overhead conductors of Licensor.

6. This license is personal to the Licensee, and the Licensee shall not assign or transfer this license or any privilege thereunder, in whole or in part, except that Licensee may by contract permit the Cypress Park and Recreation District to maintain and/or operate said park facility without relieving Licensee of its primary responsibility. Any attempt to assign or transfer this license, except as so permitted, shall confer no right on any third party.

7. Licensee agrees to pay all charges and assessments for or in connection with water, electric current or other utilities which may be furnished to or used upon said premises by the Licensee during the continuance of this license, and agrees to pay, when due, all taxes and assessments which may be levied upon property which he may cause to be placed or maintained upon the said property, and agrees to keep said premises free from all liens and encumbrances by reason of the use or occupancy of said property by itself or any person, firm or corporation, claiming under it. It is further agreed that in the event the Licensee shall fail to pay the above-mentioned taxes, assessments,

charges or liens when due, the Licensor shall have the right to pay the same and charge the amount thereof to the Licensee, who agrees to pay the same on demand, together with seven per cent (7%) interest from the date of expenditure by the Licensor.

8. The Licensee agrees that it will not park or allow the parking of any motor vehicles on any portion of said property.

9. Licensee shall indemnify and save harmless, the Licensor and any and all of Licensor's officers, agents and employees, from any and all claims, demands, loss, damage, expense and/or liability, including court costs and attorney fees, whether to any persons or to any property to which Licensor or said parties may be put or subject resulting in any manner, directly or indirectly, from any use of the above-described property under the terms of this license or otherwise, notwithstanding the circumstances that Licensor may or may not also be alleged and/or determined to have been concurrently or otherwise negligent and/or to have jointly caused or contributed by such negligence to any such claims, demands, loss, damage, expense and/or liability in any such case.

10. The Licensee further agrees to secure and keep in force, so long as this license has not been cancelled or terminated or has not expired, comprehensive bodily injury and property damage liability insurance, including contractual liability, with a combined single limit of not less than Five Hundred Thousand Dollars ($500,000). Such insurance is to be placed with companies and be in a form satisfactory to Licensor and shall be in the name of the Licensee with the Licensor named therein as an additional assured. It is further agreed that the policy so secured and maintained shall specifically provide that any other insurance carried by the Licensor which may be applicable, shall be deemed excess and non-contributing and the Licensee's insurance primary despite any conflicting provisions to the contrary; and the said insurance shall contain an endorsement providing that such insurance coverage as is provided for therein shall apply to the obligations assumed by the Licensee under this license. The policy herein shall provide that in the event of a material change or cancellation, the insurance underwriters are required to furnish Licensor Thirty (30) Days' prior written notice of any change or cancellation by registered mail directed to Southern California Edison Company, P. O. Box 351, Los Angeles, California, 90053, attention of the Insurance Manager. Certified copies of said insurance policy or policies shall be furnished to the Licensor.

11. No termination or cancellation hereof shall release the Licensee from any liability or obligation (whether of indemnity or otherwise) which may have attached or accrued previous to or which may be accruing at the time of such termination or cancellation.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed in duplicate as of the day and year herein first above written.

(Signatures)

EXAMPLE OF A GRANT OF EASEMENT IN RE-

CORDABLE FORM FOR ANOTHER UTILITY USE

PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, hereinafter called Pacific, hereby grants to SANTA CLARA COUNTY FLOOD CONTROL AND WATER DISTRICT, a body politic and corporate, hereinafter called District, an easement for a 72 inch diameter water pipeline in, over, across, and ingress and egress along, the strip of land situate in the County of Santa Clara, State of California, described as follows:

(Legal Description)

This Grant is subject to the following covenants:

1. In the event that Pacific's use of said strip of land shall at any time or times necessitate the rearrangement, relocation, reconstruction or removal of District's facilities constructed under and by virtue of this grant and Pacific shall notify District in writing of such necessity and agree to reimburse District on demand for its costs incurred in complying with such notice, then District shall provide Pacific with plans of its proposed work and an estimate of the cost thereof and, upon approval of such plans and cost by Pacific, District shall promptly proceed to effect such rearrangement, relocation, reconstruction or removal.

2. District's exercise of the rights hereby granted shall be at its sole risk and expense.

3. Any damage which District shall do to Pacific's facilities, including roads or lanes, caused by District's use of the easement area conveyed, shall be repaired by Pacific at District's expense.

4. District shall not perform any work hereunder without first giving Pacific at least one week's notice of its desire so to do. Said notice shall be given to Pacific Gas and Electric Company, 86 South Third Street, San Jose, California, attention: Division Electric Superintendent.

The provisions hereof shall inure to the benefit of and bind the successors and assigns of the parties hereto.

IN WITNESS WHEREOF Pacific has executed these presents this _____ day of _____, 1967.

(Signatures)

EXAMPLE OF A CONSENT TO COMMON USE AGREEMENT

IN RECORDABLE FORM FOR A "BACKYARD USE"

PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, hereinafter called Pacific, hereby consents to the use by

hereinafter called Permittee, of that portion of the area within Pacific's electric transmission right of way granted by

which portion lies within Lot No. _____ of Tract No. _____ Milpitas Manor Unit No. 8, as said tract is shown upon the map filed for record in the office of said County Recorder in Book _____ of maps at pages ___ and ___, for the purpose of erecting and maintaining a patio shelter subject to each of the following terms and conditions:

1. Said shelter shall be in accordance with the details of construction shown on the drawing entitled "Proposed Patio Shelter Type" attached hereto and hereby made a part hereof.

2. Said shelter shall be constructed of non-flammable materials and shall be removable in accordance with the details of construction shown on said drawing.

3. Said shelter shall be adequately grounded by means of driven ground rods properly bonded to each of the metal columns supporting said shelter, and the grounding of said shelter shall be absolutely independent of any part of Permittee's building other than said shelter.

4. Said shelter shall not project more than 10 feet onto said area within Pacific's right of way and easement.

5. Permittee shall idemnify Pacific, its officers, agents, and employees against all loss, damage, expense, and liability resulting from injury to or death of person or injury to property, arising out of or in any way connected with the erection and maintenance of said patio shelter within said area, whether or not there is any negligence of Pacific, its officers, agents or employees.

6. Permittee shall remove said patio shelter when directed by Pacific so to do in the event such removal is necessary for maintenance or repair of Pacific's electric transmission pole line located on said right of way, such necessity to be solely at Pacific's determination. If Permittee shall

fail to remove said shelter when so directed, then Pacific may perform such removal at Permittee's expense.

7. The consent hereby given is subject to all of the provisions of General Orders No. 69 and No. 95 of the Public Utilities Commission of the State of California in like manner as though expressly set forth herein.

8. Permittee accepts Pacific's title to said right of way and easement and agrees never to resist or assail said title.

The provisions hereof shall inure to the benefit of and be binding upon the successors and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed these presents in duplicate this _____ day of _____, 1962.

(Signatures)

EXAMPLE IN LICENSE (PERMIT) FORM FOR PARK AND RECREATION USE

THIS AGREEMENT made by and between PACIFIC GAS AND ELECTRIC COMPANY, a California corporation, hereinafter called Pacific, and HAYWARD AREA RECREATION AND PARK DISTRICT, a California special recreation district, hereinafter called District,

WITNESSETH: that

In consideration of District's promises herein Pacific hereby gives District non-exclusive permission, on the terms and conditions herein stated, to landscape and fence those certain premises, in accordance with the drawings hereinafter referred to, situated in the District, in the City of Hayward, County of Alameda, State of California, described as follows:

(Legal Description)

Permission herein given is subject to the following terms and conditions:

1. Permission herein given is personal to and shall not be assigned by District.

2. District acknowledges Pacific's title to said parcel of land and agrees never to resist or assail the same.

3. Pacific reserves the right to revoke this permission at any time by giving District at least thirty (30) days notice of such revocation.

4. District shall conduct its operations on said premises so as not to cause any damage to or interference with Pacific's facilities thereon, and shall not fill any portion of said premises so as to reduce the ground clearance below any of Pacific's overhead wires to less than thirty (30) feet.

5. Permission herein given is subject to the provisions of General Order No. 69 of the Public Utilities Commission of the State of California, and further to the clearance requirements established by said Commission under General Order No. 95.

6. Any trees or shrubs planted on said premises hereunder shall be of a type which will not normally grow to a height exceeding twenty (20) feet.

7. In the event any of the trees or shrubs grow to a height exceeding twenty (20) feet, Pacific shall have the right to trim such trees and shrubs at District expense.

8. It is understood that Pacific has the right to maintain its existing facilities and to install additional gas and electric facilities and to make such other uses of said premises as may be necessary, and in this connection Pacific intends to erect a second transmission line across said premises. In exercising the aforementioned rights Pacific shall not be liable to District for damage to the installations made by District hereunder.

9. Kite flying shall not be allowed on said premises.

10. The fences proposed to be constructed across Pacific's property along the boundaries of said park shall be provided with suitable gates to provide Pacific access for the maintenance and operation of its facilities.

11. District shall exercise this permission at its own sole risk and expense and, insofar as it can legally do so, agrees hereby to indemnify Pacific against and hold it harmless from any and all loss and liability for damages, whether for injury to or death of persons (including members of the public and agents and employees of District) or damage to or loss of property (including property belonging to members of the public or to District or its agents or employees), due to, arising out of, or in any way connected with, the exercise or enjoyment of any right or privilege hereunder.

12. Upon revocation or other termination hereof District may remove any improvements placed thereon by the District provided that District shall leave said premises in a clean, sightly and usable condition so far as same shall be affected by District's operations hereunder.

13. Time is of the essence of the provisions hereof.

IN WITNESS WHEREOF the parties hereto have executed these presents in duplicate this _____ day of _____, 1961.

(Signatures)

L I T E R A T U R E C I T E D

LITERATURE CITED

1. Karl J. Belser, "County Planning and Community Aesthetics," American County Government, Washington: The Association, Vol. 31, No. 3 (March, 1966), p. 49.

2. "1967 Annual Statistical Report: Part 2, Utility Construction Plans: 1966-1972," Electrical World, Vol. 166, No. 8 (February 20, 1967), p. 74.

3. "Editorial," Electrical World, Vol. 165, No. 34 (August 25, 1966), p. 21.

4. Alexander G. Lester, "Some Thoughts on Joint Planning," Right of Way, Vol. 12, No. 2 (February, 1965), pp. 29, 30.

5. Frank Randall, "Coordination of Public and Private Development," Right of Way, Vol. 11, No. 4 (August, 1964), p. 29.

6. B. J. Whitty, "The Growing Importance of Right of Way," Right of Way, Vol. 11, No. 1 (February, 1964), p. 7.

7. "Cover Story," Right of Way, Vol. 11, No. 4 (August, 1964), p. 3.

8. Alex I. Moses, "Contractor's Problems in Obtaining Easement Grants for EHV Transmission Lines," Right of Way, Vol. 11, No. 5 (October, 1964), p. 27.

9. J. G. Reichel, "The Rising Trend of Right of Way Costs-What Can We Do About It?," Right of Way, Vol. 8, No. 1 (February, 1961), p. 33.

10. L. A. Phillips, "Problems Facing Electric Utilities in Obtaining Right of Way," Right of Way, Vol. 6, No. 8 (August, 1959), p. 37.

11. Leslie Gray, "How to Reduce Right of Way Acquisition Cost Through the Uses of the Right of Way," Right of Way, Vol. 6, No. 5 (October, 1959), p. 35.

12. "Report on the White House Conference on Natural Beauty," Electrical World, Vol. 164, No. 6 (June 7, 1965), p. 5.

13. Jennings Epson, "Joint Use of Rights of Way," in American Right of Way Association Proceedings, May, 1962, pp. 46-48.

14. Allen J. Cleveland, "Public Utility Private Right of Way -- Their Effect on Acquisition of Right of Way for Other Uses; Also,

Franchises," Technical Valuation, (October, 1954), pp. 61-2.

15. "Parks Developed on Station Land," Electrical World, Vol. 165, No. 34 (August 22, 1966), p. 76.

16. Stewart L. Udall, "West's Hydroelectric Projects Generate Recreation, Too," Electrical West, Vol. 132, No. 5 (May, 1964), p. 36.

17. "Three Utilities Plan Vast Conservation, Recreation Project," Edison Electric Institute Bulletin, Vol. 34, No. 3 (March, 1966), p. 81.

18. Ibid., p. 83.

19. A. C. Cooke, "Southern California Edison Company's Good Neighbor Policy," Right of Way, Vol. 9, No. 6 (December, 1962), p. 59.

20. Edwin Vennard, The Electric Power Business. New York: McGraw-Hill Book Company, Inc. 1962, p. 39.

21. U. S. Federal Power Commission. Underground Power Transmission. Washington: U. S. Government Printing Office, 1966, p. 28.

22. Ibid., p. 29.

23. William N. Kinnard, Jr., and G. Ross Stephens. Transmission Line Right of Way and Residential Values. U. of Connecticut, Institute of Urban Research, October 1965, p. 120.

Chester W. Hatch, "Effects of Transmission Lines on Subdivision Properties," Technical Valuation, February, 1953.

Roy Wenskick & Co., "Damages Resulting from Construction of Transmission Line." The Real Estate Analyst: Appraisal Bulletin, Vol. XXIV, November 30, 1955.

Roland Bigras, "Real Estate Values Unaffected by High Tension Power Lines," Right of Way, Vol. 11, No. 2 (April, 1964), p. 11.

24. Vennard, op. cit., p. 45.

25. "A Status Report on Underground Distribution," Electrical World, Vol. 163, No. 12 (March 22, 1964), pp. 103-110.

26. A. Uno Lamm, "The Peculiarities of High-Voltage DC Power Transmission," Spectrum, Vol. 3, No. 8 (August, 1966), p. 76.

27. Edison Electric Institute Bulletin. Relative Merits of EHV-DC vs AC Transmission of Electrical Energy. New York: The Institute, Vol. 31, No. 1 (January, 1963), p. 30.

28. W. H. Colquhoun, "What About AC Versus DC Transmission?," Edison Electric Institute Bulletin, Vol. 31, No. 6 (June-July, 1963), pp. 211-212 and 219-221.

29. "How's The Intertie Coming?," Electrical West, Vol. 133, No. 4 (April, 1966), p. 26.

U. S. Federal Power Commission. National Power Survey: Part II. Washington: U. S. Government Printing Office, October, 1964, p. 159.

30. Wendall A. Morgan, "The ABC's of DC Versus AC," Electrical West, Vol. 130, No. 7 (July, 1963), pp. 44-48.

31. John Y. Mulcahy, "Overhead Transmission Lines," Right of Way, Vol. 6, No. 2 (April, 1959), p. 7.

32. U. S. Federal Power Commission. Underground Power Transmission. Washington: U. S. Government Printing Office, 1966, p. 33.

33. Robert T. Person, "Building Today For Your Electric Tomorrow," Edison Electric Institute Bulletin, Vol. 34, No. 6 (June-July, 1966), p. 181.

34. "Underground Movement in Power," Business Week, No. 2006 (February 10, 1968), p. 138.

35. E. O. George, "Planning Future Growth Development," in Southeast Electric Exchange Proceedings, Section I. Atlanta: The Exchange, April, 1966, n.p..

36. J. L. Price, "Discussion of Methods and Practice for Determination of Rights of Way Widths," in Southeast Electric Exchange Proceedings: Part II. Atlanta: The Exchange, October, 1964, p. 8.

37. "How's The Intertie Coming?," Electrical West, Vol. 133, No. 4 (April, 1966), p. 23.

38. U. S. Department of Commerce. National Bureau of Standards. Safety Rule for the Installation and Maintenance of Electric Supply and Communication Lines Comprising Part 2, the Definitions, and the Grounding Rules of the Sixth Edition of the National Electrical Safety Code. Washington: U. S. Government Printing Office, November 1, 1961, pp. 55-71.

39. Charles A. Powel, Principles of Electric Utility Engineering. New York: The Technology Press of the Massachusetts Institute of Technology or John Wiley and Sons, Inc., 1950, p. 187.

40. Florida Power and Light Company. Personal interview with W. H. Johnson, Engineer, Miami, Florida, October 18, 1966.

41. U. S. Federal Power Commission. Underground Power Transmission. Washington: U. S. Government Printing Office, 1966, p. 15.

42. Florida Power and Light Company. op. cit..

43. Carl Feilmann, and Reece Stuart, III, "Power Line of Tapered Steel Poles Meets Scenic Needs," Electrical World, Vol. 166, No. 15 (April 10, 1967), p. 24.

44. "Beautility Is Only the Beginning," Electrical World, Vol. 165, No. 34 (August 25, 1966), p. 21.

45. American Institute of Real Estate Appraiser, Condemnation Appraisal Practice, "Valuation of Transmission Line Rights of Way" by Cloise D. Carll. Chicago: The Institute, 1961, p. 251.

46. Cullen W. Coates, "Encroachments On, and Permitted Uses of Utility Rights of Way," Right of Way, Vol. 9, No. 4 (August, 1962), p. 30.

47. Ibid., p. 31.

48. Ibid., p. 34, 35.

49. Harland Bartholomew, Land Uses In American Cities. Cambridge: Harvard University Press, 1955, p. 26.

50. Public Service Company of Colorado. Correspondence from L. R. Patterson, Senior Vice President, Electric Department, Denver, Colorado, January 24, 1968.

51. Coates, op. cit., p. 31.

52. Public Service Company of Colorado. op. cit..

53. Consolidated Edison Company of New York, Incorporated. Correspondence from A. E. O'Connor, Assistant Manager, Real Estate Bureau, White Plains, New Jersey, January 12, 1968.

54. Commonwealth Edison Company. Correspondence from Hubert H. Nexon, Vice President, Chicago, Illinois, February 9, 1968.

55. Virginia Electric and Power Company. Correspondence from C. L. Sale, Manager, Real Estate Department, Richmond, Virginia, February 8, 1968.

56. "High-Voltage Beauty," The Arizonia Republic, Phoenix, Arizona (August 31, 1967), p. 12.

57. A. C. Cooke, "Uses of Transmission Rights of Way," Right of Way, Vol. 7, No. 4 (August, 1960), p. 19.

58. Ibid..

59. Ibid., p. 21.

60. William P. MacConnell and James J. Joslyn, "Controlled Tree Plantings Enhance Rights of Way," Electrical World, Vol. 166, No. 25 (June 19, 1967), pp. 32, 33.

61. A. C. Cooke, "Uses of Transmission Rights of Way," Right of Way, Vol. 7, No. 4 (August, 1960), p. 21.

62. J. E. Whitacre, "Pacific Gas and Electric and Recreation in California; Early Evoluation -- Recent Revolution," Right of Way, Vol. 9, No. 3 (June, 1962), p. 39.

63. Ibid., pp. 40, 41.

64. Herbert S. Conover, "Public Invited to Share Transmission Right of Way," Electrical World, Vol. 165, No. 41 (October 10, 1966), p. 31.

65. Florida Power and Light Company. Personal interview with Robert H. Fite, President, Miami, Florida, May, 1966.

Metropolitan Dade County Parks and Recreation Department. Personal interview with Arthur Peavy, Superintendent of Recreation, and William Byrd, Superintendent of Parks, Miami, Florida, May, 1966.

Metropolitan Dade County Planning Department. Personal interview with Reginald R. Walters, Planning Director, Miami, Florida, February, 1966.

66. "'Batter Up' Heard on Right of Way," Electrical World, Vol. 165, No. 34 (August 22, 1966), p. 73.

67. Stewart L. Udall, "West's Hydroelectric Projects Generate Recreation, Too," Electrical West, Vol. 132, No. 5 (May, 1964), p. 37.

68. A. C. Cooke, "Uses of Transmission Rights of Way," Right of Way, Vol. 7, No. 4 (August, 1960), p. 21.

69. American Electric Power Service Corporation. Correspondence from W. J. Prochaska, Esq., Attorney, New York, New York, January 30, 1968.

70. Cullen W. Coates, "Encroachments On, and Permitted Uses of Utility Rights of Way," Right of Way, Vol. 9, No. 4 (August, 1962), p. 31.

71. Public Service Electric and Gas Company. Correspondence from E. J. Thimme, Operations General Manager, Electric Department, Newark, New Jersey, January 14, 1968.

72. A. C. Cooke, "Uses of Transmission Rights of Way," Right of Way, Vol. 7, No. 4 (August, 1960), p. 18.

73. Gulf States Utilities Company. Correspondence from L. M. Welch, Vice President, Beaumont, Texas, January 3, 1968.

74. Virginia Electric and Power Company. op. cit..

75. Pacific Gas and Electric Company. Correspondence from J. G. Smith, Vice President, Personnel and General Services, San Francisco, California, February 12, 1968.

76. Southern California Edison Company. Correspondence from P. B. Peecook, Manager, Right of Way and Land Department, Los Angeles, California, January 11, 1968.

77. Pacific Gas and Electric Company. op. cit..

78. Walter J. Laska, "Fee Versus Easement," Right of Way, Vol. 14, No. 5 (October, 1967), p. 23.

79. Phillips, op. cit..

80. Commonwealth Edison Company. op. cit..

81. A. C. Cooke, "Southern California Edison Company's Good Neighbor Policy," Right of Way, Vol. 9, No. 6 (December, 1962), p. 60.

82. Southern California Edison Company. op. cit..